SCHNEIDER

SERVICE MANUAL

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- CBA' s

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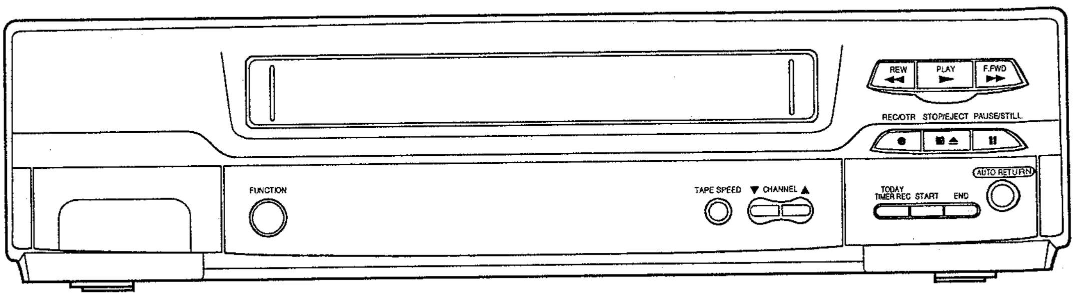
- Exploded Views
- Parts List

4-head Hi-Fi
VIDEO CASSETTE RECORDER

SVC 613


REW
PLAY
F.FWD
REC/OTR
STOP/EJECT
PAUSE/STILL
AUTO RETURN
FUNCTION
TAPE SPEED
▼ CHANNEL ▲
TODAY
TIMER REC
START
END

VHS
PAL

Ersatzteilliste SVC 613
Spare parts list SVC 613

Best-Nr. Part no.	Bezeichnung	Description	Pos.	Preisgruppe Price key
01 066 61	Serviceanw. SVC 613	Service manual SVC 613		
01 063 90	Bed.anl. SVC 613	Instruction book SVC 613	Beipack	A 7
01 066 65	Geber SVC 613	Remote control SVC 613	Beipack	
00 315 29	Batterien 1,5V Mignon	Battery	Beipack 2x	A 1
00 278 21	Antennenkabel geschirmt 1,5 m	Cable RF 1.5 m	Beipack	B 4
01 066 68	Faltkarton SVC 613	Gift box carton SVC 613		B 8
01 056 33	Sty.-Verp. kpl.	Styrofoam assembly		B 1
01 066 72	Frontblende kpl. SVC 613	Front assembly SVC 613	A1x	
01 066 73	Gehäusedeckel	Top case	A2	
01 058 71	**Cassettenschacht kpl.**	**Lift cassette assembly**	**B300**	**C 5**
01 058 74	Zylinder kpl. SVC 612/613	Cylinder assembly SVC 612/613	B2	F 1
01 057 29	Lademotor	Loading Motor	B3	C 9
01 051 06	Riemenscheibe kpl.	Pulley assy	B8	C 5
01 057 30	Führung links kpl.	Moving guide S. preparation	B9	B 3
01 057 31	Führung rechts kpl.	Moving guide T preparation	B10	B 3
01 057 32	Ladearm rechts kpl.	Loading arm T assy	B11	A 5
01 058 75	Ladearm links kpl.	Loading arm S assy	B12	A 5
01 057 34	Zahnschiene laden kpl.	Loading lever assy	B13	A 5
01 057 35	Riemen Lade	Belt loading	B21	A 5
01 058 76	Bremsband kpl.	Tension lever assy	B27	A 5
01 057 37	Audio-Kontroll-Kopf	AC head assy	B31	C 5
01 058 77	Wickelteller rechts kpl.	Reel base assy right	B32	A 5
01 057 39	Capstanmotor mit Schwungmasse	Capstan motor	B37	D 5
01 058 78	Hebelleiste "Mode"	Mode lever	B38	A 5
01 066 74	Feder Arm Bandführung	Tape guide arm spring	B46	
01 058 79	Wechselgabel	FF arm	B51	A 1
01 051 16	Riemen Schwungmasse	Capstan belt	B52	A 5
01 057 43	Löschkopf	Full erase head	B73	B 5
01 058 80	Prisma Lichtschranke	Prism	B74	A 5
01 057 45	Führungshebel	M lever holder	B81	A 5
01 057 46	Bremse F	F brake assy	B86	A 5
01 058 81	Rutschkupplung kpl.	Clutch assy	B132	A 5
01 058 82	Umlenkhebel kpl. m. Zahnrad	Idler assy	B133	A 5
01 057 49	Haupthebel	Main lever	B145	A 5
01 058 83	Wickelteller links kpl.	Reel base assy left	B339	A 5
01 057 51	Kurvenzahnrad	Cam	B358	A 5
01 057 52	Zahnrad Bremse	Sensor gear	B406	A 2
01 051 26	Zahnrad Mitte	M gear	B407	A 5
01 057 53	Bandandruckrolle kpl.	Pinch roller assy	B410	B 9
01 057 54	Bremshebel links kpl.	S brake lever assy	B412	A 5
01 057 55	Hauptbremshebel rechts kpl.	M brake T sub assy	B413	A 5
01 057 56	Hauptbremshebel links kpl.	M brake S assy	B414	A 5
01 058 84	Feder Platte	T lever spring	B417	A 5
01 058 85	Platte Hebel Bandführung	Tension plate	B418	A 1
01 058 86	Platine Mode switch	Mode switch CBA	B422	A 9
01 057 60	Feder Bremse F	F brake spring	B435	A 0
01 058 87	Arm Bandführung	Tape guide arm assy	B470	A 5
01 057 62	Hebel Cassettenführung	Cassette drive lever assy	B474	A 9
01 057 63	Hebel Bandführung kpl.	BT arm assy	B475	A 5
01 057 64	Hebel Aufnahmesperre	Rec arm	B476	A 5
01 057 65	Reinigungsrolle kpl.	Cleaner assy	B480	B 0
01 058 88	Service Adapter U17	Service adaptor U17		
01 066 77	**ZF-Platine SVC 613**	**IF PCB assembly SVC 613**	**IF 701**	
01 058 86	**Platine Mode switch**	**Mode switch CBA**	**B422**	**A 9**
01 058 90	IC LTV 817 C (Photocoupler)	IC LTV 817 C	IC 001	A 5
01 050 89	IC KIA 431 (KA 431Z)	IC KIA 431	IC 002	B 0
01 066 78	IC LA 71592 M (Y/C/A)	IC LA 71592 M	IC 301	
01 061 59	IC LA 72638 M (HiFi)	IC LA 72638 M	IC 451	C 9

01 066 81	IC CXP 88140 A - 109Q (Microcontoller)	IC CXP 88140 A - 109Q	IC 501	
00 581 25	IC KIA 324 P (LM 324) (OP amp.)	IC KIA 324 P	IC 503	A 2
00 703 15	IC TA 7291 S	IC TA 7291 S	IC 504	B 0
01 058 93	IC BR 24 C 02 F (Memory)	IC BR 24 C 02 F	IC 505	B 3
01 057 73	IC LA 7157 M	IC LA 7157 M	IC 901	C 0
01 058 94	IR Empfängerdiode PIC-26042 LU	Remote receiver PIC-26042 LU	RS 501	A 9
01 050 93	Transistor 2 SC 3576	Transistor 2 SC 3576	Q 001	B 5
00 703 20	Transistor 2 SC 4517 (2SC3866)	Transistor 2 SC 4517	Q 002	B 2
00 657 84	Transistor 2 SD 734 F	Transistor 2 SD 734 F	Q 051	A 2
00 573 26	Transistor KTC 3199 (KSC 2785/2SC536)	Transistor KTC 3199	Q 052,505	A 4
00 596 32	Transistor 2 SA 1654 (KSR2205)	Transistor 2 SA 1654	Q 053	A 0
00 403 67	Transistor 2 SA 1346 (KSR2203)	Transistor 2 SA 1346	Q 054,403,508	A 2
00 657 84	Transistor 2 SD 734 F	Transistor 2 SD 734 F	Q 055	A 2
00 655 64	Transistor KTA 1266 Y (2SA1317)	Transistor KTA 1266 Y	Q 056	A 5
00 374 06	Transistor DTC 124 ES	Transistor DTC 124 ES	Q 057,506,903	A 3
00 324 90	Transistor 2 SC 2120	Transistor 2 SC 2120	Q 059,402	A 3
00 327 54	Transistor KTC 3193 (2SC2058)	Transistor KTC 3193 (2SC2058)	Q 302-304	A 5
12 815 05	Transistor 2 SA 933 A (2SA1015)	Transistor 2 SA 933 A (2SA1015)	Q 305,401	A 0
01 032 46	Transistor KRC 106 M (2SC4133)	Transistor KRC 106 M	Q 306	A 3
00 596 33	Transistor 2 SA 608 SP (KTA1267)	Transistor 2 SA 608 SP	Q 307	A 0
00 406 62	Transistor 2 SC 3331	Transistor 2 SC 3331	Q 404,405	A 3
00 324 90	Transistor 2 SC 2120	Transistor 2 SC 2120	Q 451,509	A 3
12 815 05	Transistor 2 SA 933 A (2SA1015)	Transistor 2 SA 933 A (2SA1015)	Q 501	A 0
01 050 95	Transistor PT-380 F Photo	Transistor PT-380 F Photo	Q 503,504,514	A 5
00 228 95	Diode 1 N 4005	Diode 1 N 4005	D 001-004,057	A 6
01 050 98	Diode ERA 22-10 Y2	Diode ERA 22-10 Y2	D 005,011,013	A 5
00 344 92	Diode 1 SS 254 T	Diode 1 SS 254 T	D 006,007	A 1
01 057 74	Diode ERB 32-01	Diode ERB 32-01	D 012	A 1
01 057 75	Diode RK 33	Diode RK 33	D 014	A 5
01 058 95	Diode ERA 18-04	Diode ERA 18-04	D 015	A 1
12 711 21	Zenerdiode UZ 8,2	Diode zener UZ 8.2	D 017	A 0
00 344 92	Diode 1 SS 254 T	Diode 1 SS 254 T	D 051,053	A 1
12 780 52	Zenerdiode UZ 9,1	Diode zener UZ 9.1	D 052,055	A 0
00 596 35	Zenerdiode UZ 6,2	Diode zener UZ 6.2	D 054	A 2
00 403 70	Zenerdiode UZ 30	Diode zener UZ 30	D 056	A 2
00 349 91	Zenerdiode UZ 11	Diode zener UZ 11	D 059,911-920	A 2
00 344 92	Diode 1 SS 254 T	Diode 1 SS 254 T	D 301,451,452	A 1
00 344 92	Diode 1 SS 254 T	Diode 1 SS 254 T	D 503-506,756	A 1
01 058 96	LED SIR-56ST3F-M	LED SIR-56ST3F-M	D 551	A 1
01 050 92	Zenerdiode UZT 33	Diode zener UZT 33	D 701	B 0
00 482 78	Zenerdiode UZ 5,1	Diode zener UZ 5.1	D 901-908	A 1
12 839 56	Quarz 4,433619 MHz	Crystal 4.433619 MHz	X 302	B 9
01 020 14	Quarz 32,768 kHz	Crystal 32.768 kHz	X 501	A 9
01 056 30	Quarz 13,300857 MHz	Crystal 13.300857 MHz	X 502	A 9
00 596 39	Elko 22 uF/400 V	Electr. cap. 22 uF/400 V	C 004	A 6
00 596 40	Kerko 0,01 uF/500 V	Cer. cap. 0,01 uF/500 V	C 005	A 0
01 058 97	Elko spezial 0,047F/5,5 V	Electr. cap. 0.047F/5.5 V	C 057	
01 058 98	Netzdrossel 1 mH	Line filter 1 mH	L 001	A 1
01 051 00	Netzdrossel 51 mH	Line filter 51 mH	L 002	B 0
00 703 32	Metox 82 kOhm/2 Watt	Metal oxide res. 82 kOhm/2 Watt	R 002	A 2
01 058 99	Metox 150 Ohm/1 Watt	Metal oxide res. 150 Ohm/1 Watt	R 007	A 1
00 449 75	Metox 1,5 Ohm/1 Watt	Metal oxide res. 1.5 Ohm/1 Watt	R 014	A 9
00 663 13	Trimmpoti 100 kOhm	SFR 100 kOhm	VR 501	A 3
01 057 77	Taster KSM 0614 B	Tact switch	SW 501-505	A 0
00 703 36	Schalter SPPB61066A	Switch SPPB61066A	SW 506	A 5
01 059 00	Taster KSM 0611 B	Tact switch	SW 507	A 0
01 057 77	Taster KSM 0614 B	Tact switch	SW 652-666	A 0
01 057 78	Scartbuchse 21P	Skirt jack 21P	JK 901,902	A 5
01 056 26	Anzeigedisplay	Display F.I.P.	FP 501	
01 059 01	ZF-Modulator	RF Modulator	MD 701	D 7
01 059 02	Tuner	Tuner unit	TU 701	E 6
01 051 03	Netztrafo	Pulse transformer	T 001	C 0
00 481 65	IEC Sicherung 1,6 AT/250 V	Fuse 1.6 AL/250 V	F 001	A 6

MAIN SECTION

4-head Hi-Fi
VIDEO CASSETTE RECORDER

SVC613

Sec. 1: Main Section
- *Specifications*
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA' s

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SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Remark
1. Video					
1-1. Video Output (PB)	Vp-p	0.8	1.0	1.2	FL6A
1-2. Video Output (R/P)	Vp-p	0.8	1.0	1.2	
1-3. Video S/N Y (R/P)	dB	40	45		SP Mode, W/O Burst
1-4. Video Color S/N AM (R/P)	dB	37	41		SP Mode
1-5. Video Color S/N PM (R/P)	dB	30	36		SP Mode
1-6. Resolution (PB)	Line	230	245		SP Mode
2. Servo					
2-1. Jitter Low (R/P)	µsec		0.07	0.12	SP Mode
2-2. Wow & Flutter (R/P)	%		0.3	0.5	SP Mode
3. Normal Audio					
3-1. Output (PB)	dBV	-9	-6	-3	SP Mode
3-2. Output (R/P)	dBV	-9	-6	-1.5	SP Mode
3-3. S/N (R/P)	dB	36	41		SP Mode
3-4. Distortion (R/P)	%		1.0	4.0	SP Mode
3-5. Freq. resp (R/P) at 200Hz	dB	-11	-4		SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-14	-4		SP Mode
4. Tuner					
4-1. Video output (E-E)	Vp-p	0.8	1.0	1.2	E-E Mode
4-2. Video S/N (E-E)	dB	39	42		E-E Mode
4-3. Audio output (E-E)	mV/rms	250	400	550	E-E Mode
4-4. Audio S/N (E-E)	dB	40	46		E-E Mode
5. Hi-Fi Audio					
5-1. Output	dBV	-20	-8	-12	SP Mode
5-2. Dynamic Range	dB	70	85		SP Mode
5-3. Freq. resp (6dB B. W)	Hz		20~20K		SP Mode

Note: Nominal specs represent the design specs. All units should be able to approximate these – some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; In no case should a unit fail to meet limit specs.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety. Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.

Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:

1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation tape
2) PVC tubing
3) Spacers
4) Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 5 - 6 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector

The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.

Replacement procedure

1) Remove the old connector by cutting the wires at a point close to the connector.

Important: Do not re-use a connector. (Discard it.)

2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

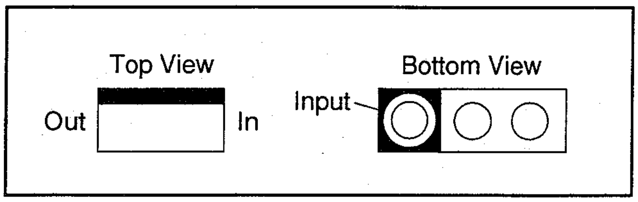
4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

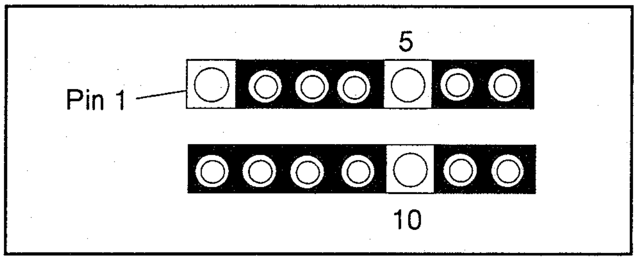
STANDARD NOTES FOR SERVICING

Circuit Board Indications

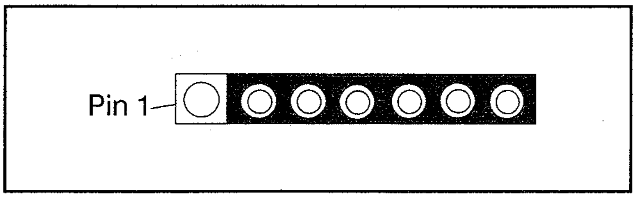
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

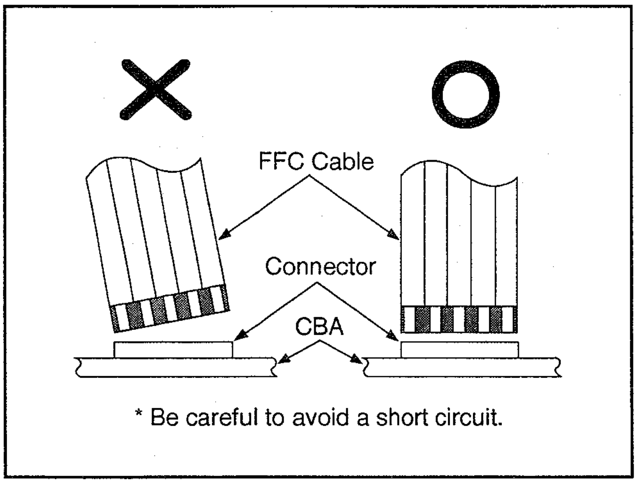


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



* Be careful to avoid a short circuit.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

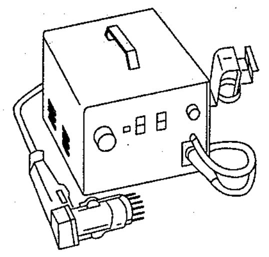


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

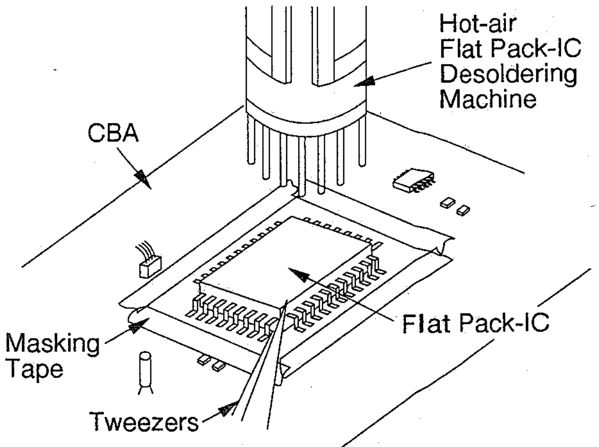


Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

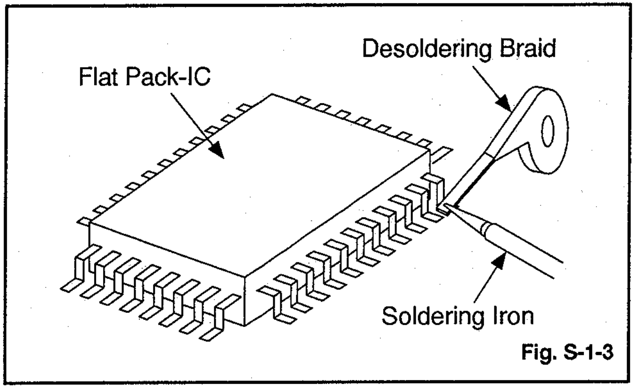

Desoldering Braid
Flat Pack-IC
Soldering Iron

Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

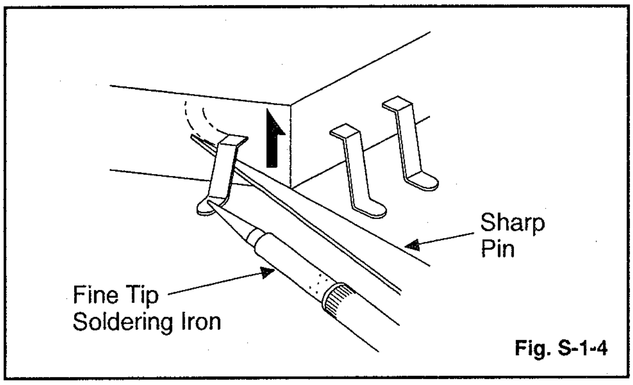

Sharp Pin
Fine Tip Soldering Iron

Fig. S-1-4

(3) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(4) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.

(4) Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)

(5) Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

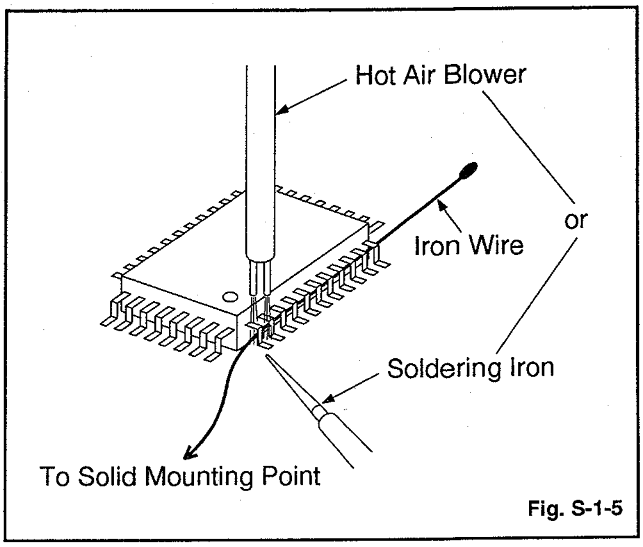

Hot Air Blower
or
Iron Wire
Soldering Iron
To Solid Mounting Point

Fig. S-1-5

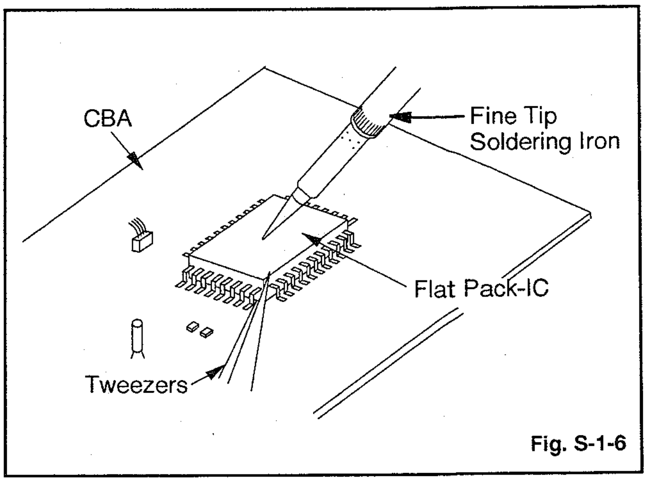

CBA
Fine Tip Soldering Iron
Flat Pack-IC
Tweezers

Fig. S-1-6

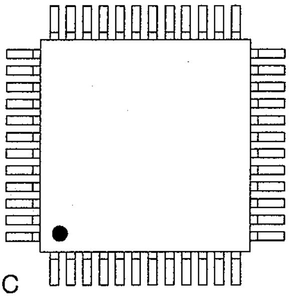
2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The " ● " mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre- solder the four corners of the flat pack-IC. (See Fig. S-1-8.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

Example :



Pin 1 of the Flat Pack-IC is indicated by a " ● " mark.

Fig. S-1-7

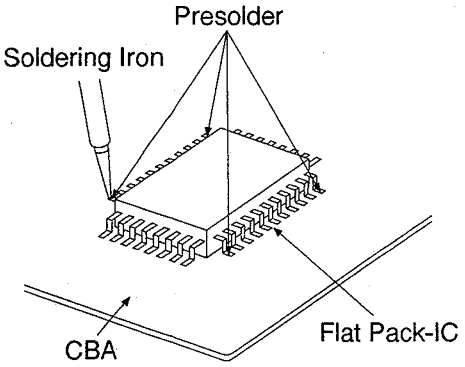


Fig. S-1-8

Instructions for Handling Semiconductors

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

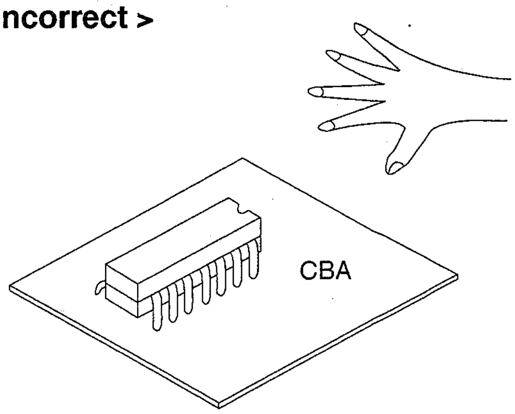
1. Ground for Human Body

Be sure to wear a grounding band (1 MΩ) that is properly grounded to remove any static electricity that may be charged on the body.

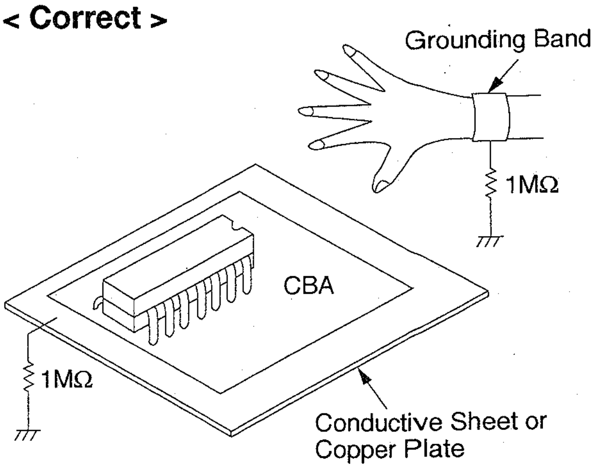
2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1MΩ) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.

< Incorrect >



< Correct >



PREPARATION FOR SERVICING

How to Use U19 Deck Extension Cable

(1) Remove the Deck Mechanism Assembly. If needed, remove the Main CBA from the chassis. Refer to "Cabinet Disassembly Instructions" on page 1-5-1.

(2) Connect Main CBA and Deck with the U19 Deck Extension Cable (A) as shown in Fig. 1. And connect Main CBA and Deck with U19 Deck Extension Cable (B) as shown in Fig. 1. Connect 2 Clips on U19 Deck Extension Cable (B) to Shield on Main CBA.
(U19 Deck Extension Cable: N1200XA)

Note 1: There are 3 types of U19 Deck Extension Cable (A). They are for 2 Head, 4 Head, and Hi-Fi. Use a connector indicated as shown. Be careful not to let the unused connector contact other parts.

Note 2: Some noise will be present in the playback picture when the extension cable is used.

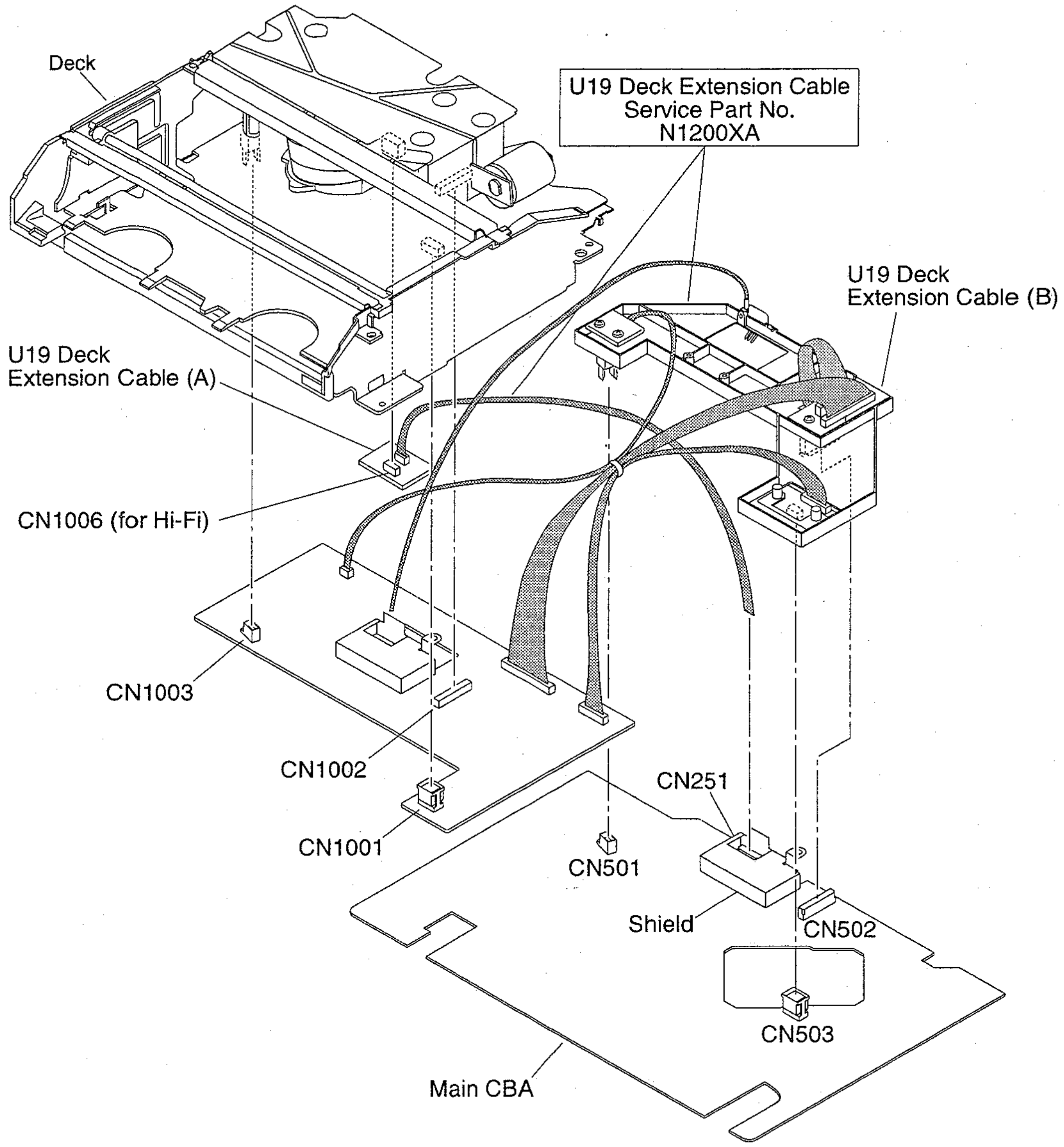

Deck
U19 Deck Extension Cable
Service Part No.
N1200XA
U19 Deck
Extension Cable (B)
U19 Deck
Extension Cable (A)
CN1006 (for Hi-Fi)
CN1003
CN1002
CN1001
CN251
CN501
Shield
CN502
CN503
Main CBA

Fig. 1

How to Enter the Service Mode

Note: When the unit is set in the service mode, the display will keep blinking.

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate erratically.

What to do for preparation

Insert a tape into the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly. Make sure the power is on, connect TP502 (SENSOR INHIBITION) to TP501 (GROUND). This will stop the function of Tape Start Sensor, Tape End Sensor and Reel Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.) See Fig. 2.

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

About REC-Safety Switch

Caution:

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

What to do for preparation

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA. See Fig. 2.

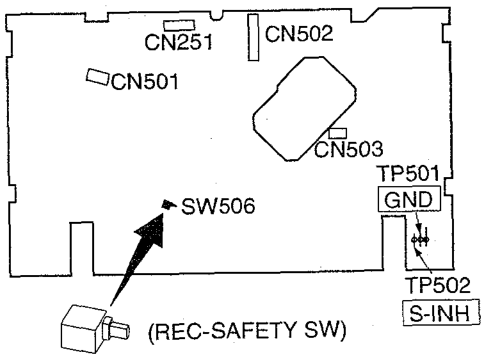
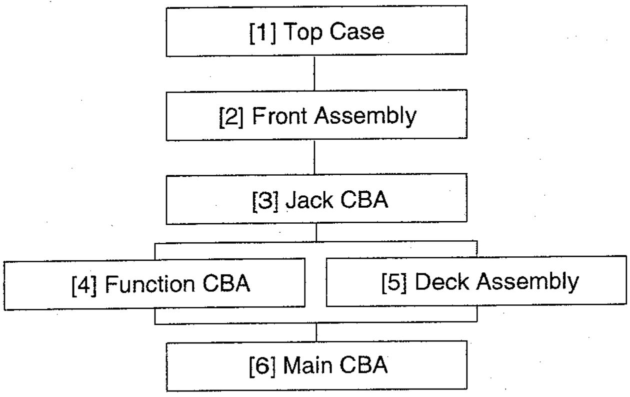


Fig. 2

CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Top Case	1	5(S-1)	-
[2]	Front Assembly	2, 3	*7(L-1)	1
[3]	Jack CBA	4	3(S-2), (CN901)	-
[4]	Function CBA	2, 5	*(L-2), (CN505)	2
[5]	Deck Assembly	6	5(S-3), (CN251, CN501, CN503, CN505)	3
[6]	Main CBA	5, 7	3(S-4), *2(L-3)	4

↓ ↓ ↓ ↓ ↓

① ② ③ ④ ⑤

①: Identification (location) No. of parts in the figures

②: Name of the part

③: Figure Number for reference

④: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw,
CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

⑤:Refer to "Reference Notes."

Reference Notes

CAUTION: Locking Tabs (L-1) are fragile. Be careful not to break them.

1. Release seven Locking Tabs (L-1). To do this, first release three Locking Tabs (A) at the bottom, and then four Locking Tabs (B) at the top. (Fig. 2, 3)
2. Disconnect Connector (CN505) to remove Function CBA. Hold Main CBA while pulling up on the Function CBA. (Fig. 5)
3. Remove five Screws (S-3). Then slowly lift the Deck Assembly up. Lifting Deck Assembly disconnects four Connectors (CN251, CN501, CN503, CN505). (Fig. 6)
4. When reassembling the unit, always reinsert Locking Tabs (L-3), and then reinstall Screws (S-4). These screws are critical for proper shielding of the Main CBA. (Fig. 7)

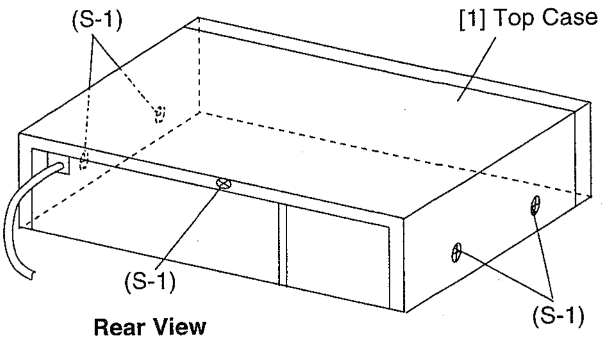


Fig. 1

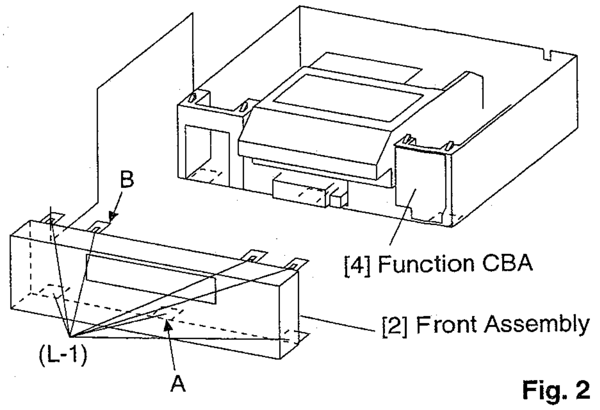


Fig. 2

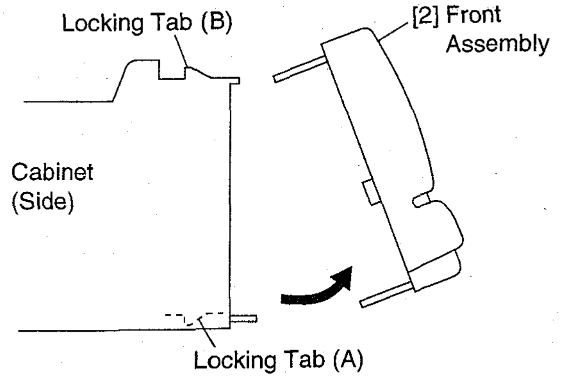

Locking Tab (B)
[2] Front Assembly
Cabinet (Side)
Locking Tab (A)

Fig. 3

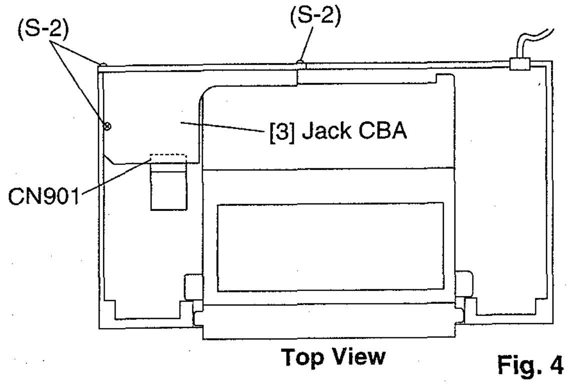

(S-2)
(S-2)
[3] Jack CBA
CN901
Top View

Fig. 4

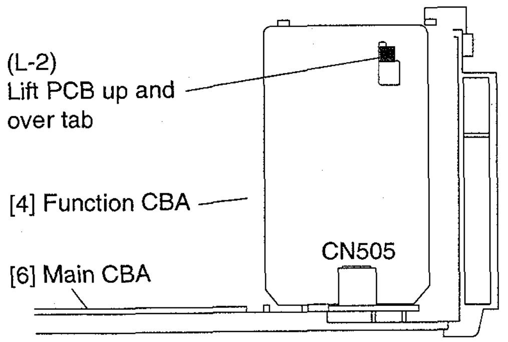

(L-2)
Lift PCB up and over tab
[4] Function CBA
CN505
[6] Main CBA

Fig. 5

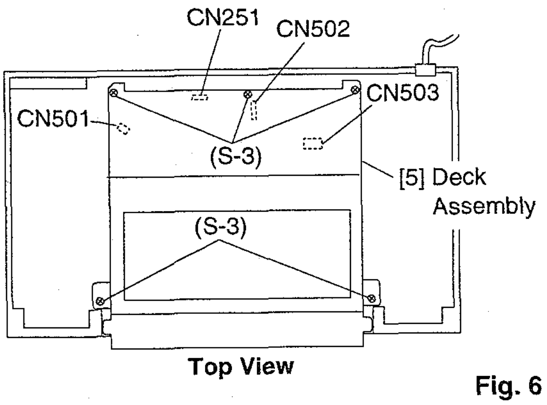

CN251
CN502
CN501
CN503
(S-3)
[5] Deck Assembly
(S-3)
Top View

Fig. 6

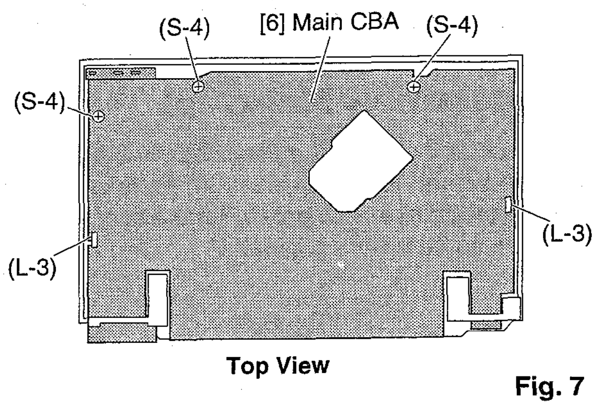

(S-4)
[6] Main CBA
(S-4)
(S-4)
(L-3)
(L-3)
Top View

Fig. 7

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly".

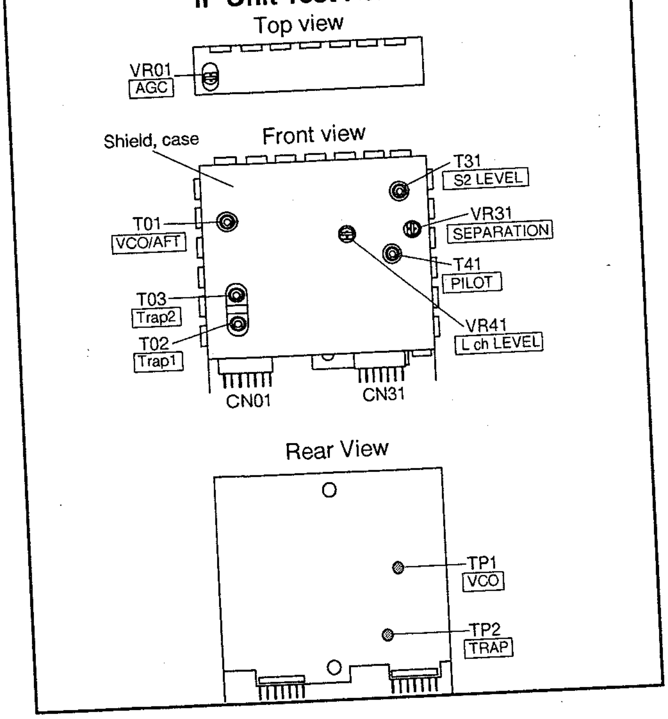
Notes:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press either channel "▼" or "▲" button first, then the " PLAY " button (VCR's Front Panel only).

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Frange: AC~DC-20MHz
2. PAL Pattern Generator (color bar with 100% white)
3. Alignment Tape (FL6A)
4. Blank Tape (Available Locally)
5. Spectrum Analyzer
6. TV UP Converter
7. DC Voltmeter
8. AC Voltmeter
9. Distortion meter
10. TV Modulator
11. TV Monitor
12. TV multi channel sound generator (Germany)

IF Unit Test Points


Top view
VR01
AGC
Shield, case
Front view
T31
S2 LEVEL
T01
VCO/AFT
VR31
SEPARATION
T41
PILOT
T03
Trap2
T02
Trap1
VR41
L ch LEVEL
CN01
CN31
Rear View
TP1
VCO
TP2
TRAP

1. Head Switching Position Adjustment

Purpose: To determine the Head Switching point during playback.

Symptom of Misadjustment: May cause Head Switching noise or vertical jitter in the picture.

Test Point	Adj. Point	Mode	Input
TP751(V-OUT) TP302(RF-SW) GND	VR501 (SW-P)	PLAY (SP)	----

Tape	Measurement Equipment	Spec.
FL6A	Oscilloscope	6.5H±1H (412.7±60µs)

Connections of Measurement Equipment

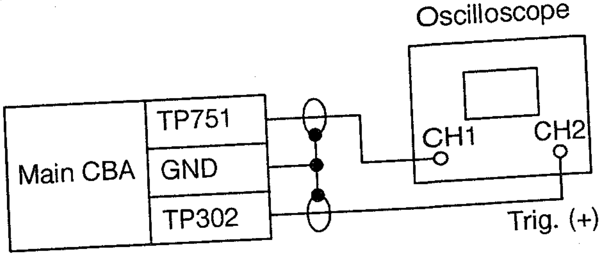
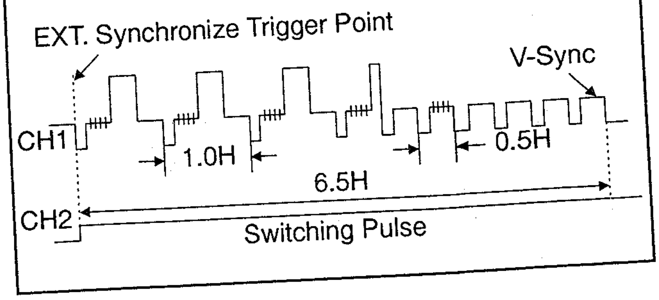

Oscilloscope
Main CBA
TP751
GND
TP302
CH1
CH2
Trig. (+)

Figure 1


EXT. Synchronize Trigger Point
V-Sync
CH1
1.0H
0.5H
6.5H
CH2
Switching Pulse

Reference Note:

TP302, TP751, VR501 : Main CBA

- Play back the test tape and adjust VR501 so that the V-sync front edge of the CH1 video output waveform is at the 6.5H(412.7µs) delayed position from the rising edge of the CH2 head switching pulse waveform.

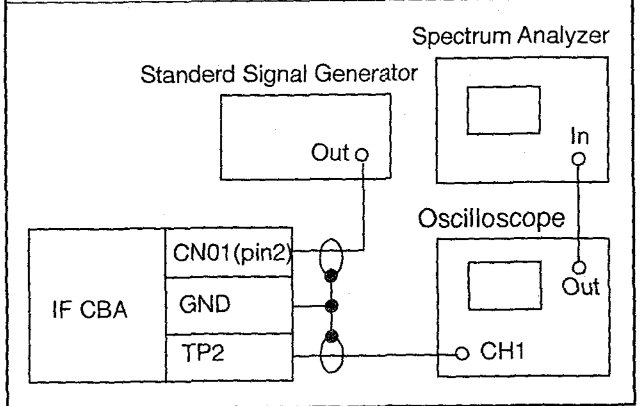
2. IF Unit Adjustment 1

Note: Remove the IF unit from the Main CBA.

2-1. Adjacent Channel Trap Adjustment 1

Purpose: To comply IF for local radio wave regulation.

Symptom of Misadjustment: If may cause the noise in picture that audio IF may affect to video IF.
If the frequency of trap overlape on video IF, IC input level WIl be lower and The S/N ratio will be lower.

Test Point	Adj. Point	Mode	Input
Pin2 of CN01 TP2 (TRAP)	T02 (Trap1)	----	31.9MHz (70dBµV sine wave)
Tape	**Measurement Equipment**	**Spec.**	
----	Standard Signal Generator/ Oscilloscope/ Spectrum Analyzer	----	
Connections of Measurement Equipment			
			

Spectrum Analyzer
Standerd Signal Generator
Out
In
Oscilloscope
Out
IF CBA
CN01(pin2)
GND
TP2
CH1

Reference Notes:

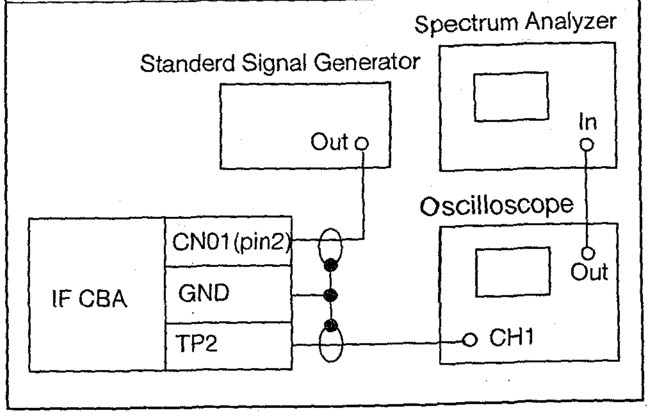
Pin2 of CN01, T02, TP2 : IF CBA (IF unit)

1. Input Signal to Pin2 of CN01.
2. Adjust core of Coil T02 so that the waveform level becomes minimum.

2-2. Adjacent Channel Trap Adjustment2

Purpose: To comply IF for local radio wave regulation.

Symptom of Misadjustment: If may cause the noise in picture that audio IF may affect to video IF.
If the frequency of trap overlape on video IF, IC input level WIl be lower and The S/N ratio will be lower.

Test Point	Adj. Point	Mode	Input
Pin2 of CN01 TP2 (TRAP)	T03 (Trap2)	----	41.4MHz (70dBµV sine wave)
Tape	**Measurement Equipment**	**Spec.**	
----	Standard Signal Generator/ Oscilloscope/ Spectrum Analyzer	----	
Connections of Measurement Equipment			
			

Spectrum Analyzer
Standerd Signal Generator
Out
In
Oscilloscope
Out
IF CBA
CN01(pin2)
GND
TP2
CH1

Reference Notes:

Pin2 of CN01, T03, TP2 : IF CBA (IF unit)

1. Input Signal to Pin1 of CN01.
2. Adjust core of Coil T03 so that the waveform level becomes minimum.

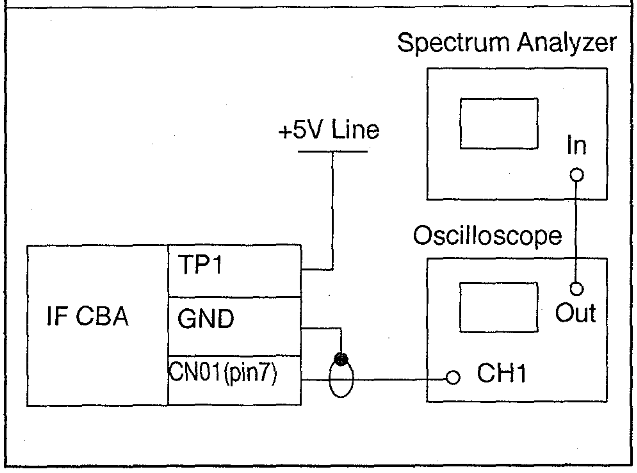
3. IF Unit Adjustment 2

Note: Install the IF unit on Main CBA.

3-1. VCO Adjustment

Purpose: To adjust IF signal to optimum frequency .

Symptom of Misadjustment: Tunning will result unsyncronized

Test Point	Adj. Point	Mode	Input
Pin7 of CN01 TP1(VCO)	T01 (VCO)	----	----
Tape	**Measurement Equipment**	**Spec.**	
----	Oscilloscope Spectrum Analyzer	38.9MHz	
Connections of Measurement Equipment			
			

Spectrum Analyzer
+5V Line
In
Oscilloscope
TP1
IF CBA
GND
Out
CN01(pin7)
CH1

Reference Notes:

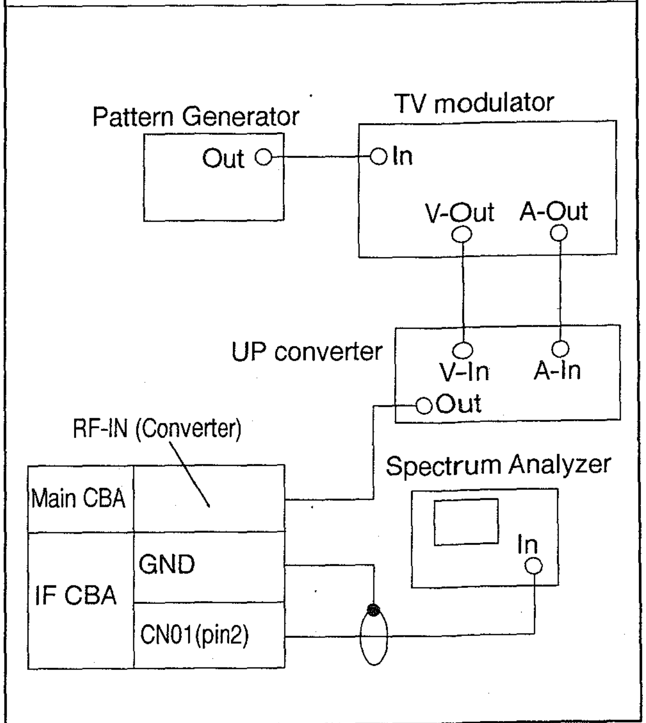
Pin7 of CN01, TP1, T01 : IF CBA (IF Unit)

1. Connect PCB Jumper between TP1 and +5V line. Operate the IFunit for at least 5minutes. (See above Figure.)
2. Adjust T01 (VCO) so that the VCO of the frequency becomes following value. *IF frequency= 38.9MHz

3-2. AFT Adjustment

Purpose: To adjust AFT effective rang which correct uncyncronized tuning after tuner preset.

Symptom of Misadjustment: May cause uncyncronized tuning after tuner preset.

Test Point	Adj. Point	Mode	Input
Pin2 of CN01	T01 (VCO)	----	Color Bar with 100% white
Tape	**Measurement Equipment**	**Spec.**	
----	TV modulator UP converter Pattern Generator Spectrum Analyzer	38.9MHz± 25kHz	
Connections of Measurement Equipment			
			

Pattern Generator
Out
TV modulator
In
V-Out
A-Out
UP converter
V-In
A-In
Out
RF-IN (Converter)
Spectrum Analyzer
Main CBA
IF CBA
GND
CN01(pin2)
In

Reference Notes:

Pin2 of CN01, T01 : IF CBA (IF Unit)

1. Set the tuner in preset mode then tune to the following frequency.

   *Tuner reception frequency = 203.25MHz (VHF-H renge)

   *Electric field strength: 70dBμV
2. Cancel the preset mode.
3. Adjust core of Coil T01 so that the IF frequency.becomes following value.

   *IF frequency= 38.9MHz± 25kHz

Note: Set the range of Adjust Spectrum Analyzer 500kHz.

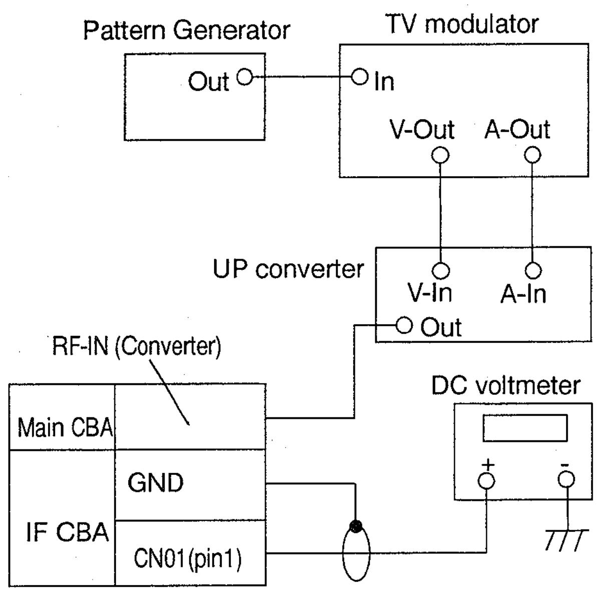
4. AGC Adjustment

Note: Install the IF unit in Main CBA.

Purpose: To adjust the strength of received air signal.

Symptom of Misadjustment: May cause noise or beat in the picture.

Test Point	Adj. Point	Mode	Input
Pin1 of CN01	VR01 (AGC)	----	Color Bar with 100% white
Tape	**Measurement Equipment**	**Spec.**	
----	TV modulator UP converter Pattern Generator DC Voltmeter	DC 1.8V±0.1V	
Connections of Measurement Equipment			



Reference Notes:

Pin1 of CN01, VR01 : IF CBA (IF unit)

1. Set the tuner in preset made and tune to the following frequency.

   *Tuner reception frequency = 203.25MHz (VHF-H renge)

   *Electric field strength: 70dBμV

3. Adjust VR01 so that the voltage of AGC becomes the following level.

   *DC voltmeter level=DC 1.8V±0.1V

5. Sound Multiple Unit Adjustment

Notes:

1. Output the color bar with 100% white from the video pattern generator, then make 87.5% modulation by the TV modulator.
2. Output the 1kHz Stereo 100% signal from the sound generator, then set 27kHz deviation exactly by the sound generator.
3. Set the sound generator to: Tone: 1kHz, Mode: Stereo.
4. Set the TV up converter to 70dBμ, (203.25MHz) then set the channel.

5-1. S2 Level Adjustment

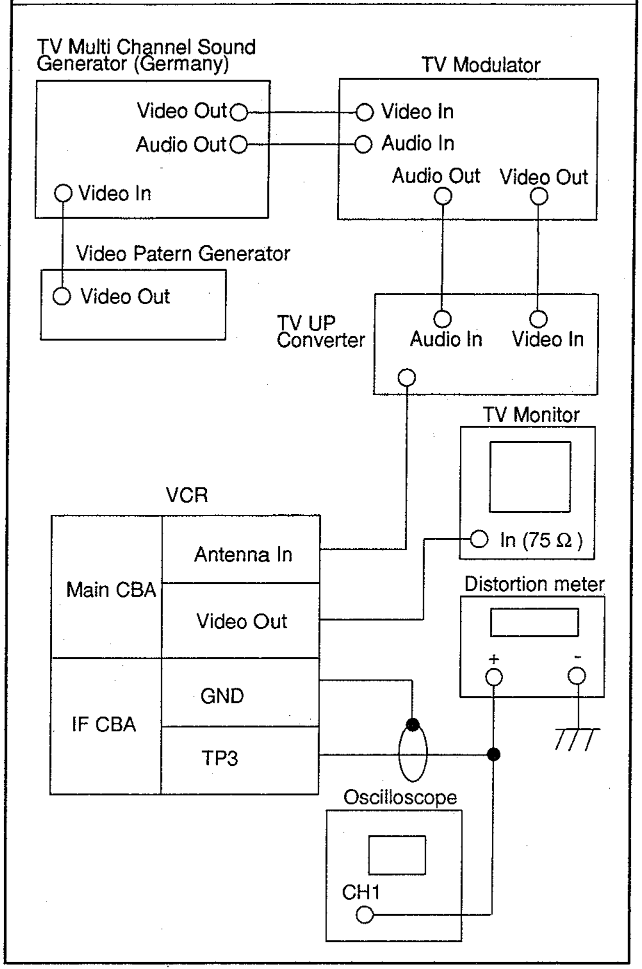
Note: Install the IF unit in Main CBA.

Purpose: To minimize the audio distortion.

Symptom of Misadjustment: May cause audio distortion.

Test Point	Adj. Point	Mode	Input
Antenna In Video Out GND TP3	T31 (S2 LEVEL)	----	----
Tape	**Measurement Equipment**	**Spec.**	
----	TV monitor/ TV multi channel sound generator (Germany) / TV modulator/ UP converter/ Pattern Generator/ Oscilloscope/ Distortion meter		

Connections of Measurement Equipment


TV Multi Channel Sound Generator (Germany)
Video Out
Audio Out
Video In
TV Modulator
Video In
Audio In
Audio Out
Video Out
Video Patern Generator
Video Out
TV UP Converter
Audio In
Video In
TV Monitor
In (75 Ω)
VCR
Main CBA
Antenna In
Video Out
IF CBA
GND
TP3
Distortion meter
+
-
Oscilloscope
CH1

Reference Note:

Antenna In, Video Out: Main CBA
TP3, T31: IF CBA (IF unit)

1. Set the tuner in preset made and tune to the following frequency.

   *Tuner reception frequency = 203.25MHz (VHF-H renge)

   *Electric field strength: 70dBμV

2. Adjust core of coil T31 so that the audio distortion becomes maximum level.

5-2. Pilot Adjustment

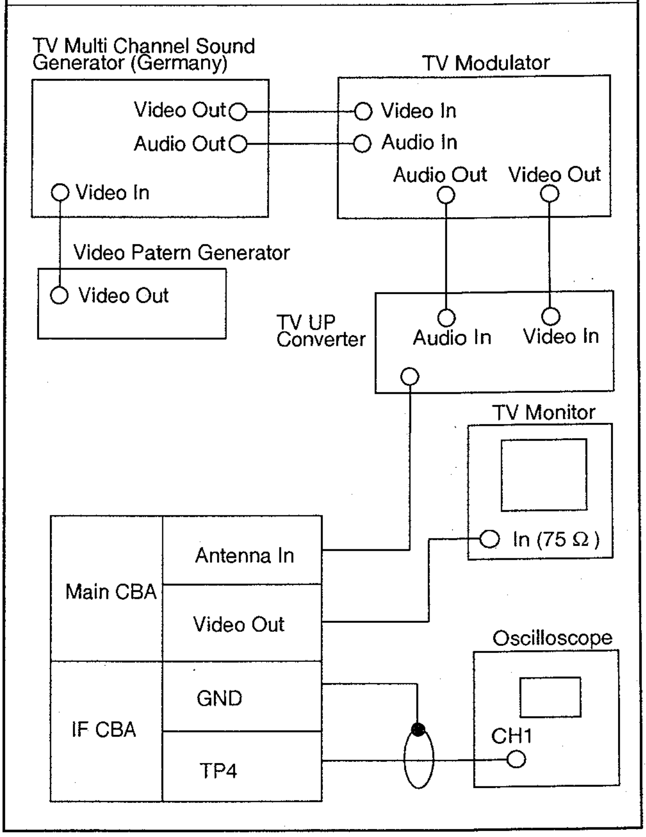
Purpose: To set the Stereo and Sound multiple distinct signal becomes maximum level.

Symptom of Misadjustment: If pilot adjustment is incorrect, Stereo and Sound multiple function may not distinct properly.

Test Point	Adj. Point	Mode	Input
Antenna In Video Out GND TP4	T41 (PILOT)	----	----

Tape	Measurement Equipment	Spec.
-----	TV monitor/ TV multi channel sound generator (Germany) / TV modulator/ UP converter/ Pattern Generator/ Oscilloscope	

Connections of Measurement Equipment


TV Multi Channel Sound Generator (Germany)
Video Out
Audio Out
Video In
TV Modulator
Video In
Audio In
Audio Out
Video Out
Video Patern Generator
Video Out
TV UP Converter
Audio In
Video In
TV Monitor
In (75 Ω)
Main CBA
Antenna In
Video Out
IF CBA
GND
TP4
Oscilloscope
CH1

Reference Note:

Antenna In, Video Out: Main CBA
TP4, T41: IF CBA (IF unit)

1. Set the tuner in preset made and tune to the following frequency.

*Tuner reception frequency = 203.25MHz (VHF-H renge)

*Electric field strength: 70dBµV

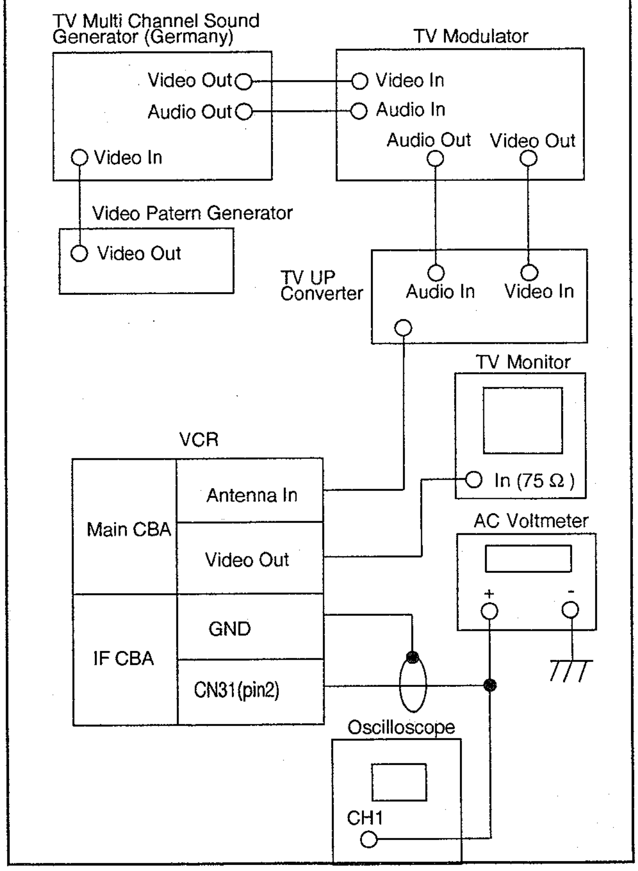
2. Adjust core of coil T41 so that the pilot signal becomes maximum level.

5-3. Output Level Adjustment

Purpose: To set the Audio output level correctly.

Symptom of Misadjustment: If output level adjustment is incorrect, Tuner (Sound multiple) audio level may not becomes properly.

Test Point	Adj. Point	Mode	Input
Antenna In Video Out GND 2pin of CN31(Lch)	VR41 (Lch LEVEL)	----	R ch off
Tape	**Measurement Equipment**	**Spec.**	
----	TV monitor/ TV multi channel sound generator (Germany) / TV modulator/ UP converter/ Pattern Generator/ Oscilloscope/ AC volt meter	250mV rms	
Connections of Measurement Equipment			


TV Multi Channel Sound Generator (Germany)
Video Out
Audio Out
Video In
TV Modulator
Video In
Audio In
Audio Out
Video Out
Video Patern Generator
Video Out
TV UP Converter
Audio In
Video In
TV Monitor
In (75 Ω)
VCR
Main CBA
Antenna In
Video Out
IF CBA
GND
CN31(pin2)
AC Voltmeter
+
-
Oscilloscope
CH1

Reference Note:

Antenna In, Video Out : Main CBA
CN31, VR41: IF CBA (IF unit)

1. Set the tuner in preset made and tune to the following frequency.

   *Tuner reception frequency = 203.25MHz (VHF-H renge)

   *Electric field strength: 70dBµV

2. Set the TV multi channel sound generator (Germany) to:
   Output R ch: off
3. Adjust 2pin of CN31(L ch) so that the output level becomes 250mV rms.

5-4. Separation Adjustment

Caution: Do not attempt to do this adjustment without the specified equipment.

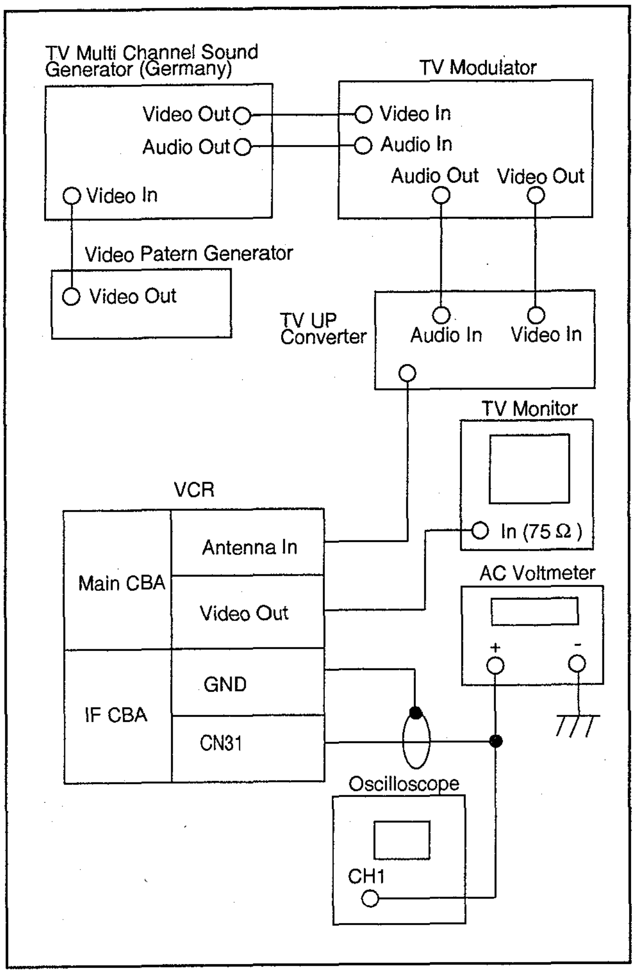
Purpose:

To set the audio output level of the tuner properly.

Symptom of Misadjustment:

Audio signal of L ch and R ch may be mixed under E-E and/or Rec mode.

Test Point	Adj. Point	Mode	Input
Antenna In Video Out GND 2pin of CN301(Lch)	VR31 (SEPARATION)	E-E	L ch off
Tape	**Measurement Equipment**	**Spec.**	
—	TV monitor/ TV multi channel sound generator (Germany) / TV modulator/ UP converter/ Pattern Generator/ Oscilloscope/ AC volt meter	—	
Connections of Measurement Equipment			


TV Multi Channel Sound Generator (Germany)
Video Out
Audio Out
Video In
TV Modulator
Video In
Audio In
Audio Out
Video Out
Video Patern Generator
Video Out
TV UP Converter
Audio In
Video In
TV Monitor
In (75 Ω)
VCR
Main CBA
Antenna In
Video Out
AC Voltmeter
+
-
IF CBA
GND
CN31
Oscilloscope
CH1

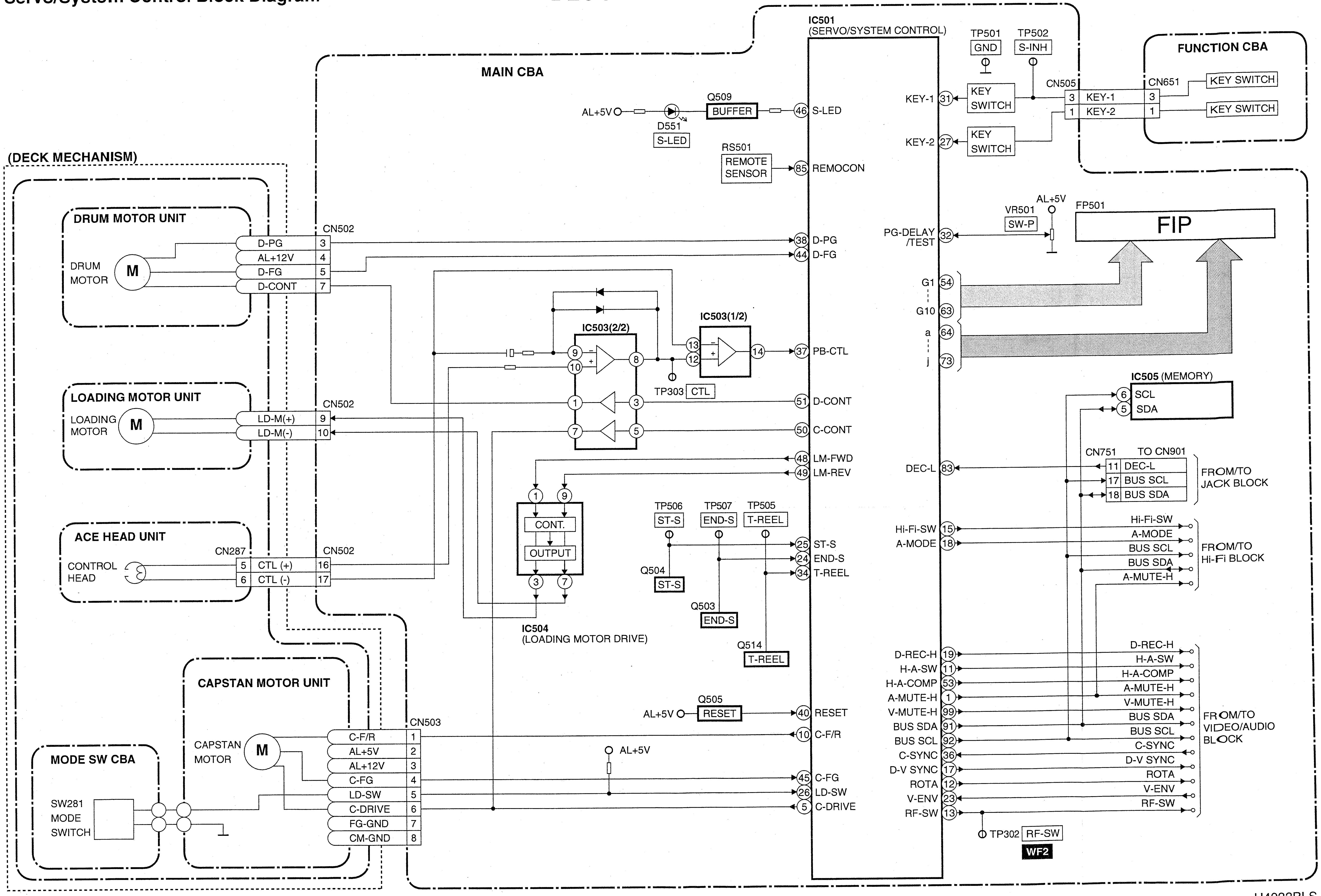
Reference Notes:

Antenna In, Video Out
CN31, VR31: IF CBA (IF unit)

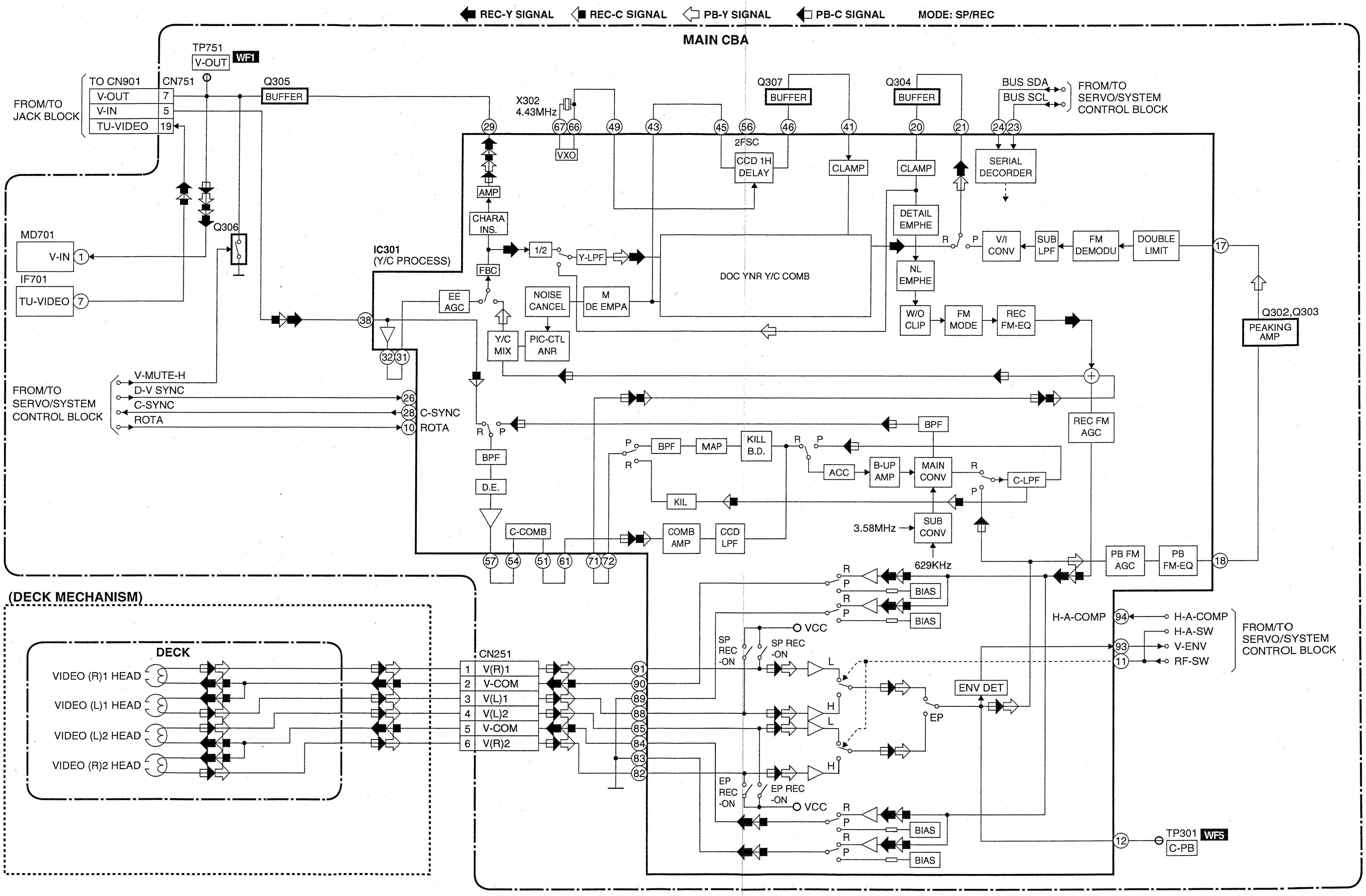
1. Set the TV multi channel sound generator (Germany) to:
   Output L ch: off
2. Adjust 2pin of CN31(L ch) so that the output signal becomes minimam level.
3. Check 1pin of CN31(R ch) so that the output signal becomes 250mVrms level.

BLOCK DIAGRAMS

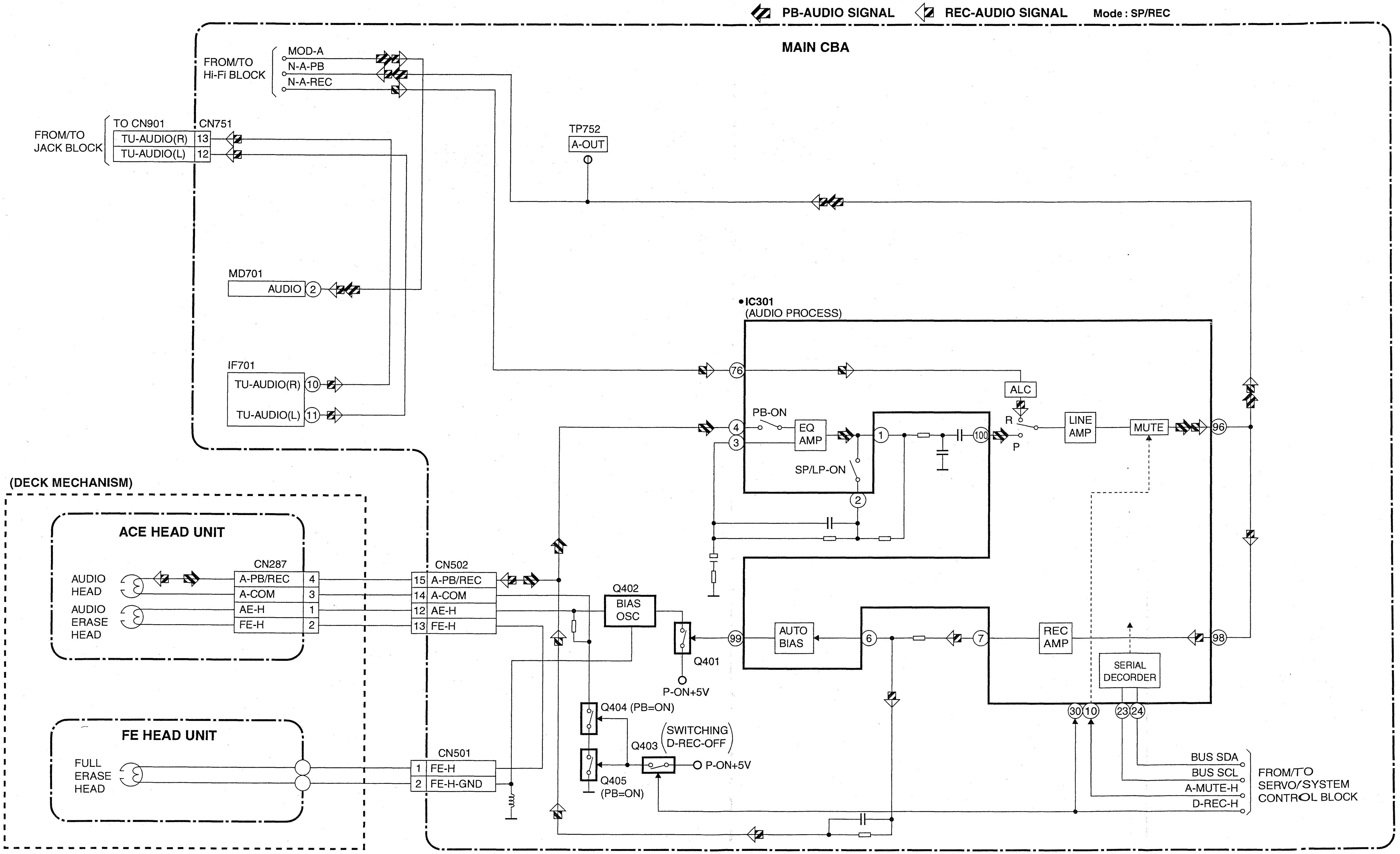
Servo/System Control Block Diagram


MAIN CBA
(DECK MECHANISM)
DRUM MOTOR UNIT
DRUM MOTOR
M
D-PG 3
AL+12V 4
D-FG 5
D-CONT 7
CN502
LOADING MOTOR UNIT
LOADING MOTOR
M
LD-M(+) 9
LD-M(-) 10
CN502
ACE HEAD UNIT
CONTROL HEAD
CN287
5 CTL (+) 16
6 CTL (-) 17
CN502
CAPSTAN MOTOR UNIT
CAPSTAN MOTOR
M
CN503
C-F/R 1
AL+5V 2
AL+12V 3
C-FG 4
LD-SW 5
C-DRIVE 6
FG-GND 7
CM-GND 8
MODE SW CBA
SW281 MODE SWITCH
AL+5V
D551
S-LED
Q509
BUFFER
RS501
REMOTE SENSOR
IC503(2/2)
9
10
8
1
3
7
5
IC503(1/2)
13
12
14
TP303 CTL
IC504 (LOADING MOTOR DRIVE)
1
9
CONT.
OUTPUT
3
7
TP506 ST-S
TP507 END-S
TP505 T-REEL
Q504 ST-S
Q503 END-S
Q514 T-REEL
Q505 RESET
AL+5V
AL+5V
IC501 (SERVO/SYSTEM CONTROL)
46 S-LED
85 REMOCON
38 D-PG
44 D-FG
37 PB-CTL
51 D-CONT
50 C-CONT
48 LM-FWD
49 LM-REV
25 ST-S
24 END-S
34 T-REEL
40 RESET
10 C-F/R
45 C-FG
26 LD-SW
5 C-DRIVE
KEY-1 31
KEY-2 27
PG-DELAY /TEST 32
G1 54
G10 63
a 64
j 73
DEC-L 83
Hi-Fi-SW 15
A-MODE 18
D-REC-H 19
H-A-SW 11
H-A-COMP 53
A-MUTE-H 1
V-MUTE-H 99
BUS SDA 91
BUS SCL 92
C-SYNC 36
D-V SYNC 17
ROTA 12
V-ENV 23
RF-SW 13
TP501 GND
TP502 S-INH
KEY SWITCH
KEY SWITCH
CN505
3 KEY-1 3
1 KEY-2 1
FUNCTION CBA
CN651
KEY SWITCH
KEY SWITCH
VR501 SW-P
AL+5V
FP501
FIP
IC505 (MEMORY)
6 SCL
5 SDA
CN751 TO CN901
11 DEC-L
17 BUS SCL
18 BUS SDA
FROM/TO JACK BLOCK
Hi-Fi-SW
A-MODE
BUS SCL
BUS SDA
A-MUTE-H
FROM/TO Hi-Fi BLOCK
D-REC-H
H-A-SW
H-A-COMP
A-MUTE-H
V-MUTE-H
BUS SDA
BUS SCL
C-SYNC
D-V SYNC
ROTA
V-ENV
RF-SW
FROM/TO VIDEO/AUDIO BLOCK
TP302 RF-SW
WF2

Video Block Diagram


REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
MODE: SP/REC
MAIN CBA
TP751
V-OUT
WF1
FROM/TO
JACK BLOCK
TO CN901
V-OUT
V-IN
TU-VIDEO
CN751
7
5
19
Q305
BUFFER
X302
4.43MHz
VXO
Q307
BUFFER
Q304
BUFFER
BUS SDA
BUS SCL
FROM/TO
SERVO/SYSTEM
CONTROL BLOCK
2FSC
CCD 1H
DELAY
CLAMP
CLAMP
SERIAL
DECORDER
AMP
CHARA
INS.
FBC
1/2
Y-LPF
DOC YNR Y/C COMB
DETAIL
EMPHE
NL
EMPHE
V/I
CONV
SUB
LPF
FM
DEMODU
DOUBLE
LIMIT
W/O
CLIP
FM
MODE
REC
FM-EQ
Q302,Q303
PEAKING
AMP
MD701
V-IN
IF701
TU-VIDEO
Q306
IC301
(Y/C PROCESS)
EE
AGC
NOISE
CANCEL
M
DE EMPA
Y/C
MIX
PIC-CTL
ANR
FROM/TO
SERVO/SYSTEM
CONTROL BLOCK
V-MUTE-H
D-V SYNC
C-SYNC
ROTA
C-SYNC
ROTA
REC FM
AGC
BPF
BPF
MAP
KILL
B.D.
ACC
B-UP
AMP
MAIN
CONV
C-LPF
BPF
D.E.
KIL
SUB
CONV
3.58MHz
629KHz
C-COMB
COMB
AMP
CCD
LPF
PB FM
AGC
PB
FM-EQ
BIAS
BIAS
BIAS
BIAS
(DECK MECHANISM)
DECK
VIDEO (R)1 HEAD
VIDEO (L)1 HEAD
VIDEO (L)2 HEAD
VIDEO (R)2 HEAD
CN251
1 V(R)1
2 V-COM
3 V(L)1
4 V(L)2
5 V-COM
6 V(R)2
VCC
SP
REC
-ON
SP REC
-ON
EP
REC
-ON
EP REC
-ON
VCC
ENV DET
EP
H-A-COMP
H-A-COMP
H-A-SW
V-ENV
RF-SW
FROM/TO
SERVO/SYSTEM
CONTROL BLOCK
TP301
WF5
C-PB
R
P
L
H
1
7
29
67
66
49
43
45
56
46
41
20
21
24
23
17
38
32
31
26
28
10
57
54
51
61
71
72
18
91
90
89
88
85
84
83
82
94
93
11
12

Audio Block Diagram

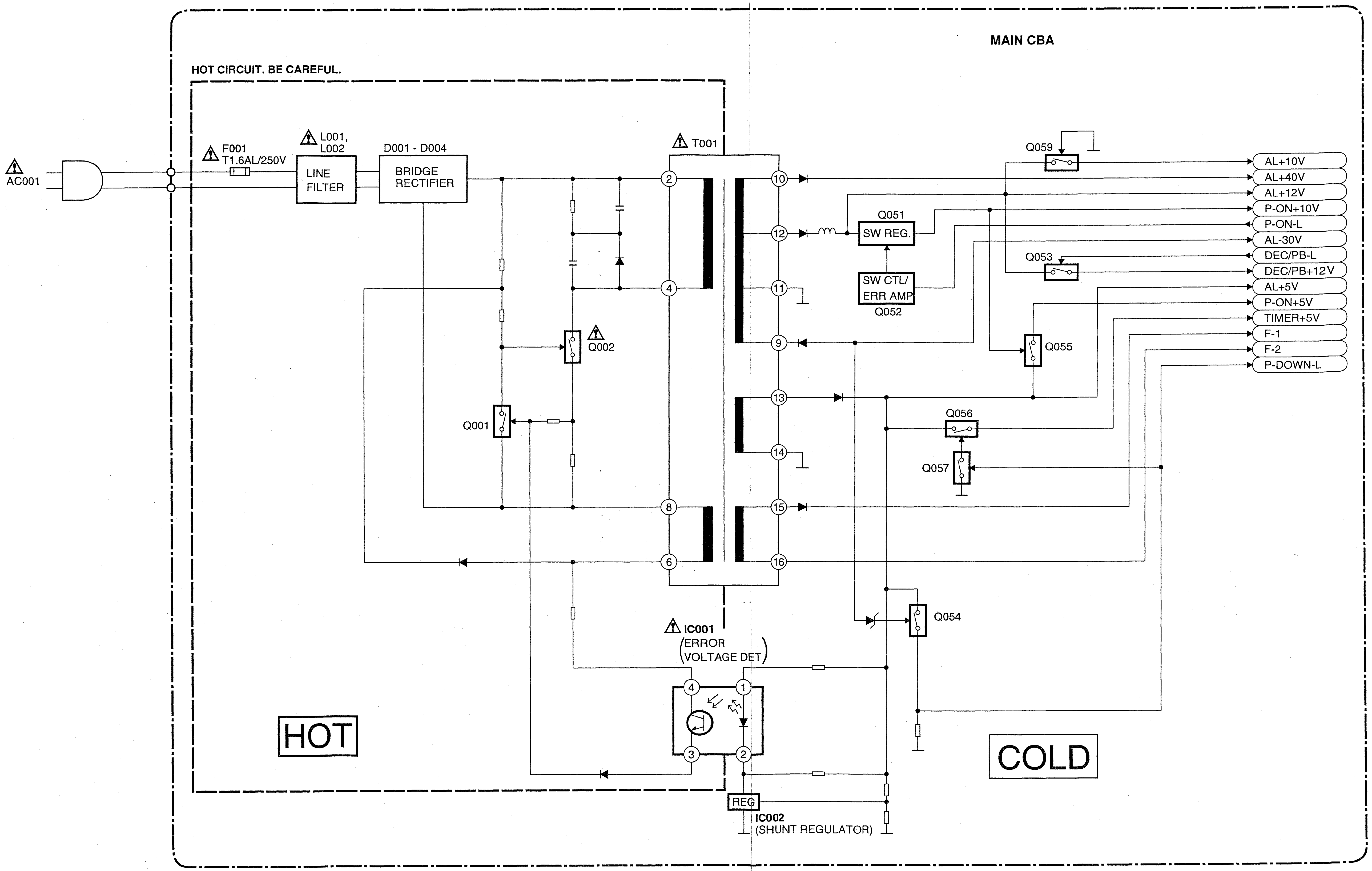

PB-AUDIO SIGNAL
REC-AUDIO SIGNAL
Mode : SP/REC
MAIN CBA
FROM/TO
Hi-Fi BLOCK
MOD-A
N-A-PB
N-A-REC
FROM/TO
JACK BLOCK
TO CN901
CN751
TU-AUDIO(R) 13
TU-AUDIO(L) 12
TP752
A-OUT
MD701
AUDIO 2
IF701
TU-AUDIO(R) 10
TU-AUDIO(L) 11
IC301
(AUDIO PROCESS)
76
ALC
PB-ON
EQ
AMP
4
3
1
100
2
SP/LP-ON
R
P
LINE
AMP
MUTE
96
98
REC
AMP
7
6
AUTO
BIAS
99
SERIAL
DECORDER
30
10
23
24
(DECK MECHANISM)
ACE HEAD UNIT
AUDIO
HEAD
AUDIO
ERASE
HEAD
CN287
A-PB/REC 4
A-COM 3
AE-H 1
FE-H 2
CN502
15 A-PB/REC
14 A-COM
12 AE-H
13 FE-H
Q402
BIAS
OSC
Q401
P-ON+5V
Q404 (PB=ON)
Q403
(SWITCHING
D-REC-OFF)
P-ON+5V
Q405
(PB=ON)
FE HEAD UNIT
FULL
ERASE
HEAD
CN501
1 FE-H
2 FE-H-GND
BUS SDA
BUS SCL
A-MUTE-H
D-REC-H
FROM/TO
SERVO/SYSTEM
CONTROL BLOCK

Power Supply Block Diagram

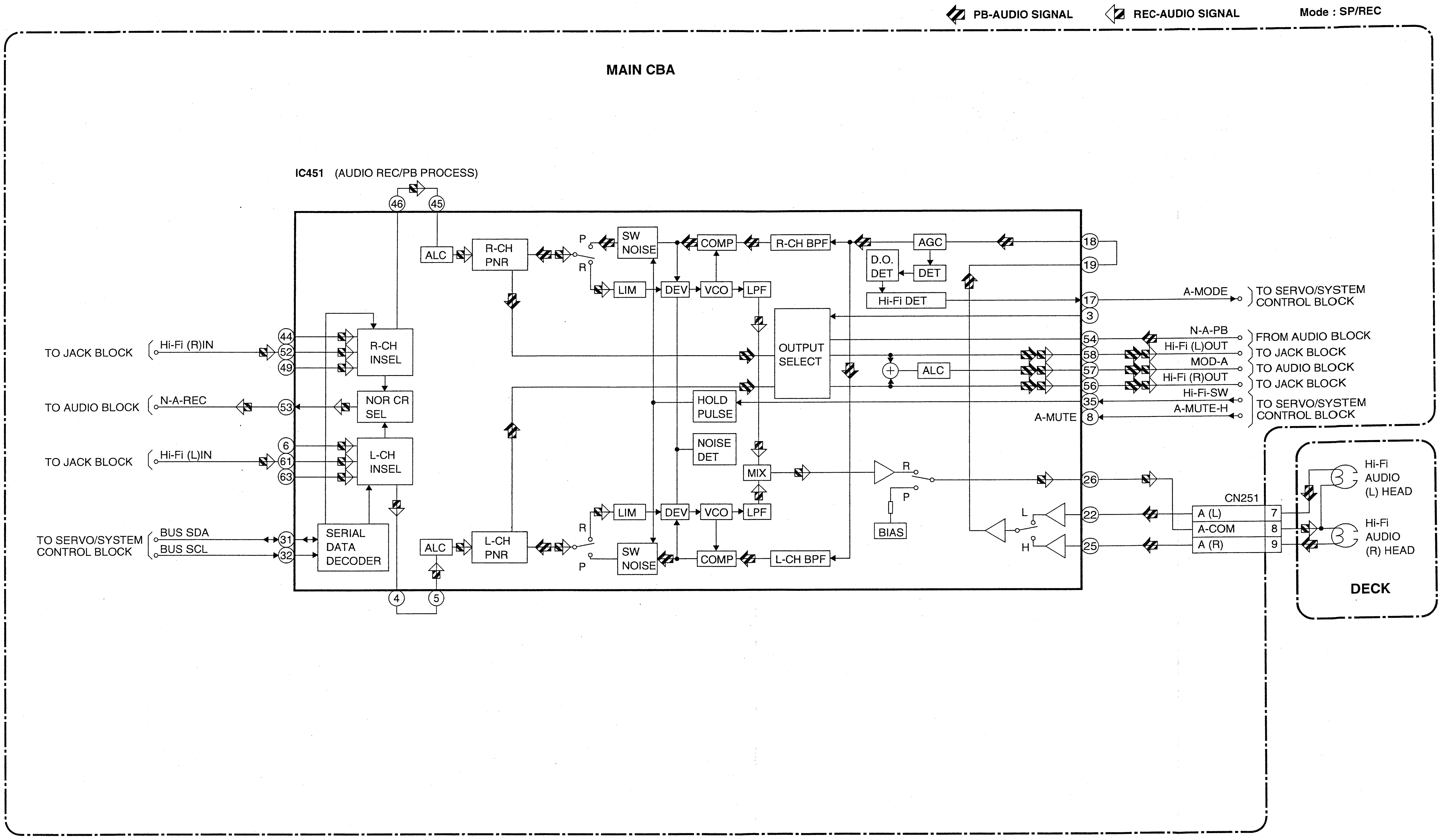
NOTE :
The voltage for parts in hot circuit is measured using hot GND as a common terminal

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE T1.6AL/250V FUSE.

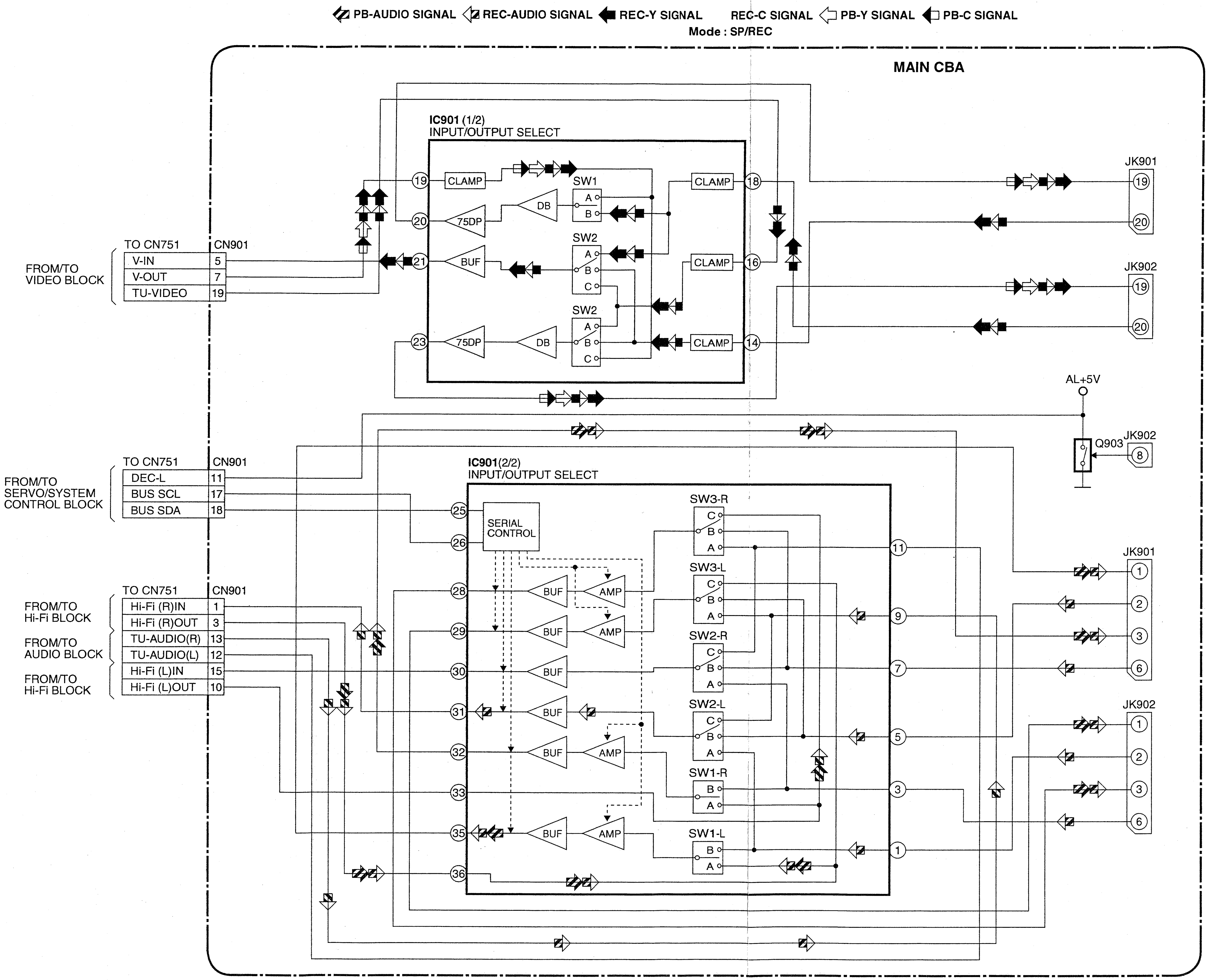
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.


MAIN CBA
HOT CIRCUIT. BE CAREFUL.
AC001
F001
T1.6AL/250V
L001,
L002
LINE
FILTER
D001 - D004
BRIDGE
RECTIFIER
T001
Q002
Q001
IC001
ERROR
VOLTAGE DET
REG
IC002
(SHUNT REGULATOR)
HOT
COLD
Q059
Q051
SW REG.
SW CTL/
ERR AMP
Q052
Q053
Q055
Q056
Q057
Q054
AL+10V
AL+40V
AL+12V
P-ON+10V
P-ON-L
AL-30V
DEC/PB-L
DEC/PB+12V
AL+5V
P-ON+5V
TIMER+5V
F-1
F-2
P-DOWN-L
2
4
8
6
10
12
11
9
13
14
15
16
1
3

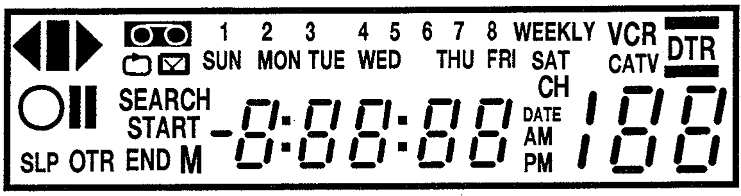
Hi-Fi Audio Block Diagram


PB-AUDIO SIGNAL
REC-AUDIO SIGNAL
Mode : SP/REC
MAIN CBA
IC451 (AUDIO REC/PB PROCESS)
46
45
ALC
R-CH PNR
P
R
SW NOISE
COMP
R-CH BPF
AGC
D.O. DET
DET
Hi-Fi DET
LIM
DEV
VCO
LPF
18
19
17
3
A-MODE
TO SERVO/SYSTEM CONTROL BLOCK
TO JACK BLOCK
Hi-Fi (R)IN
44
52
49
R-CH INSEL
OUTPUT SELECT
ALC
54
58
57
56
35
8
N-A-PB
Hi-Fi (L)OUT
MOD-A
Hi-Fi (R)OUT
Hi-Fi-SW
A-MUTE-H
A-MUTE
FROM AUDIO BLOCK
TO JACK BLOCK
TO AUDIO BLOCK
TO JACK BLOCK
TO SERVO/SYSTEM CONTROL BLOCK
TO AUDIO BLOCK
N-A-REC
53
NOR CR SEL
HOLD PULSE
NOISE DET
TO JACK BLOCK
Hi-Fi (L)IN
6
61
63
L-CH INSEL
MIX
R
P
BIAS
26
22
25
L
H
CN251
A (L)
A-COM
A (R)
7
8
9
Hi-Fi AUDIO (L) HEAD
Hi-Fi AUDIO (R) HEAD
DECK
TO SERVO/SYSTEM CONTROL BLOCK
BUS SDA
BUS SCL
31
32
SERIAL DATA DECODER
ALC
L-CH PNR
LIM
DEV
VCO
LPF
SW NOISE
COMP
L-CH BPF
4
5

Jack Block Diagram


PB-AUDIO SIGNAL
REC-AUDIO SIGNAL
REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
Mode : SP/REC
MAIN CBA
IC901 (1/2)
INPUT/OUTPUT SELECT
CLAMP
SW1
A
B
DB
75DP
SW2
A
B
C
BUF
SW2
A
B
C
75DP
DB
CLAMP
CLAMP
CLAMP
19
20
21
23
18
16
14
JK901
19
20
JK902
19
20
FROM/TO
VIDEO BLOCK
TO CN751
CN901
V-IN
5
V-OUT
7
TU-VIDEO
19
AL+5V
Q903
JK902
8
FROM/TO
SERVO/SYSTEM
CONTROL BLOCK
TO CN751
CN901
DEC-L
11
BUS SCL
17
BUS SDA
18
IC901(2/2)
INPUT/OUTPUT SELECT
SERIAL
CONTROL
25
26
SW3-R
C
B
A
SW3-L
C
B
A
SW2-R
C
B
A
SW2-L
C
B
A
SW1-R
B
A
SW1-L
B
A
BUF
AMP
28
29
30
31
32
33
35
36
11
9
7
5
3
1
FROM/TO
Hi-Fi BLOCK
FROM/TO
AUDIO BLOCK
FROM/TO
Hi-Fi BLOCK
TO CN751
CN901
Hi-Fi (R)IN
1
Hi-Fi (R)OUT
3
TU-AUDIO(R)
13
TU-AUDIO(L)
12
Hi-Fi (L)IN
15
Hi-Fi (L)OUT
10
JK901
1
2
3
6
JK902
1
2
3
6

Function Indicator Symbols



MODE	INDICATOR		
Cassette "IN" Cassette "OUT"	" 📼 " " 📼 "		ON OFF
STOP	" ■ "		ON
FF	" ▶ "	3.2Hz	Blinks
REW	" ◀ "	3.2Hz	Blinks
PLAY	" ▶ "	0.8Hz	
PLAY PAUSE N. CANCEL	" ▮▮ " " ▶ "		ON ON
FS PLAY	" ▶ "	1.6Hz	Blinks
RS Reverse Rotation PLAY	" ◀ "	1.6Hz	Blinks
REC	" ○ " " ▶ "	 0.8Hz	ON Blinks
REC PAUSE	" ○ " " ▮▮ "		ON ON
Counter Memory"ON" Counter Memory "OFF"	"M" "M"		ON OFF
Tape Speed SP LP	"SP" "LP"		ON ON
TIMER REC	" ○ " " ▶ " " ☑ "	 0.8Hz 	ON Blinks ON
OTR	" ○ " " ▶ " "OTR"	 0.8Hz 	ON Blinks ON
REPEAT PLAY "OFF" REPEAT PLAY "ON"	" ↻ " " ↻ "		OFF ON
AUTO TRACKING Done In Search Manual	"DTR" "DTR" "DTR"	 3.2Hz 	ON Blinks OFF
AUTO RETURN	" ◀ " " ☑ "	3.2Hz 0.8Hz	
When Reel Mechanism is not functioning correctly Capstan Mechanism is not functioning correctly	" 📼 " "CH NO.1	0.8Hz 0.8Hz	Blinks Blinks
When Tape Loading Mechanism is not functioning correctly	" 📼 " "CH NO.2	0.8Hz 0.8Hz	Blinks Blinks
When Cassette Loading Mechanism is not functioning correctly	" 📼 " "CH NO.3	0.8Hz 0.8Hz	Blinks Blinks
When the Drum is not working properly	" 📼 " "CH NO.4	0.8Hz 0.8Hz	Blinks Blinks
S-INH CONDITION	ALL MODE		Blinks at 0.8Hz interval

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

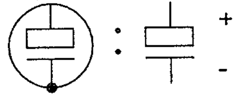
Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).
3. Resistor wattages are 1/4W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in µF ($P=10^{-6}\mu F$).
5. All voltages are DC voltages unless otherwise specified.
6. Electrical parts such as capacitors, connectors, diodes, IC's, transistors, resistors, switches, and fuses are identified by four digits. The first two digits are not shown for each component. In each block of the diagram, there is a note such as shown below to indicate these abbreviated two digits.

Capacitors and transistors are represented by the following symbols.

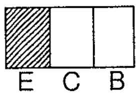
CBA Symbols

(Top View) (Bottom View)



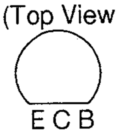
Electrolytic Capacitor

(Bottom View)



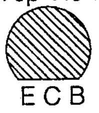
: Transistor or Digital Transistor

(Top View)



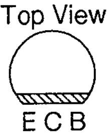
NPN Transistor

(Top View)



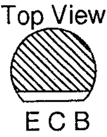
PNP Transistor

(Top View)



NPN Digital Transistor

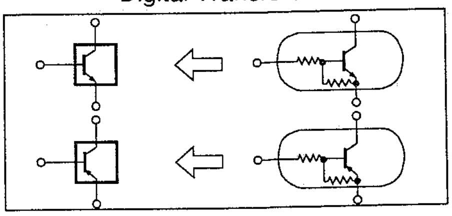
(Top View)



PNP Digital Transistor

Schematic Diagram Symbols

Digital Transistor



LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:**

FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

2. **CAUTION:**

Fixed Voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

3. **Note:**

(1) Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.

(2) To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors

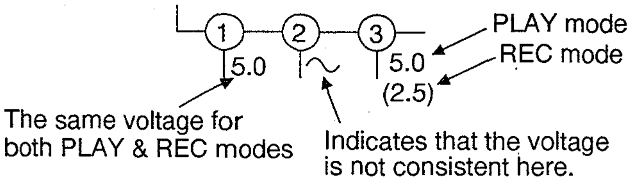
(1) Prefix symbol "CN" means "connector" (can disconnect and reconnect).

(2) Prefix symbol "CL" means "wire-solder holes of the PCB" (wire is soldered directly).

5. Note: Mark "•" is a leadless (chip) component.

6. Mode: SP/REC

7. Voltage indications for PLAY and REC modes on the schematics are as shown below:


1
2
3
5.0
5.0
(2.5)
PLAY mode
REC mode
The same voltage for both PLAY & REC modes
Indicates that the voltage is not consistent here.

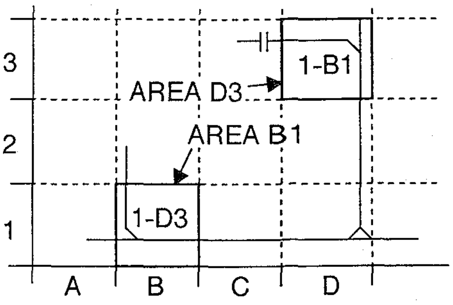
Unit: Volts

8. How to read converged lines

1-D3
Distinction Area
Line Number
(1 to 3 digits)

Examples:

1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



9. Test Point Information

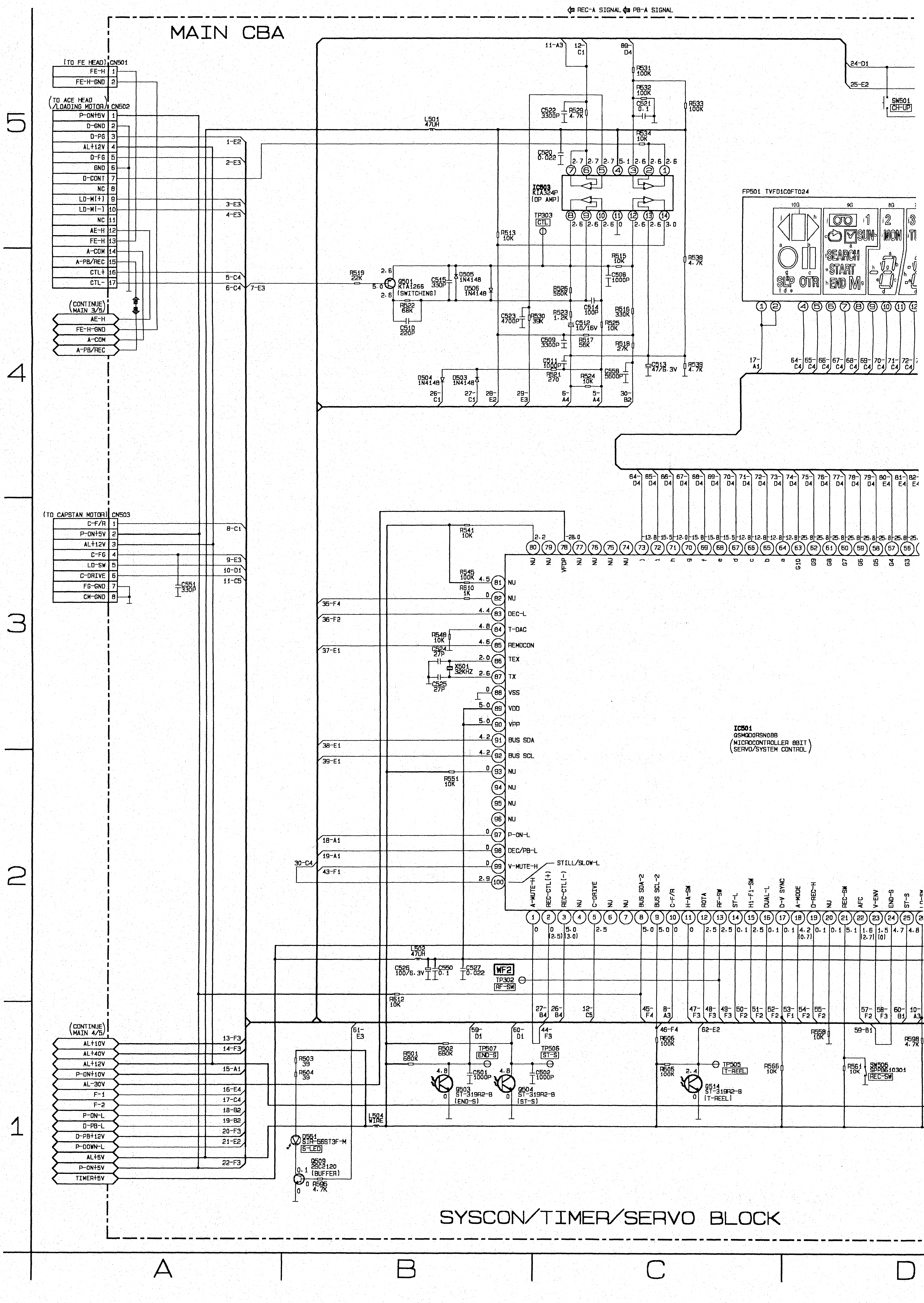
⦶ : Indicates a test point with a jumper wire across a hole in the PCB.

▭➔ : Used to indicate a test point with a component lead on foil side.

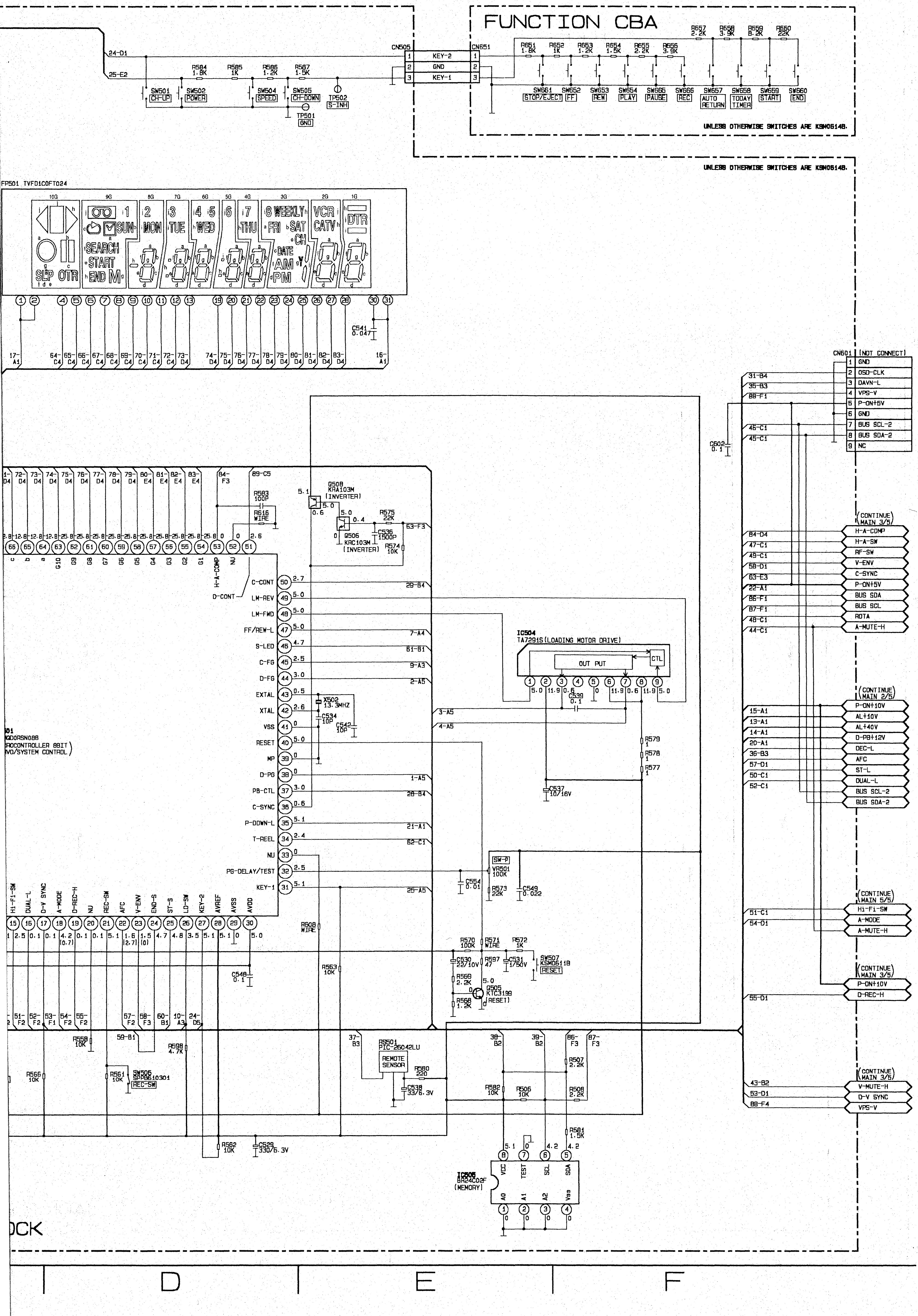
▨ : Used to indicate a test point with no test pin.

● : Used to indicate a test point with a test pin.

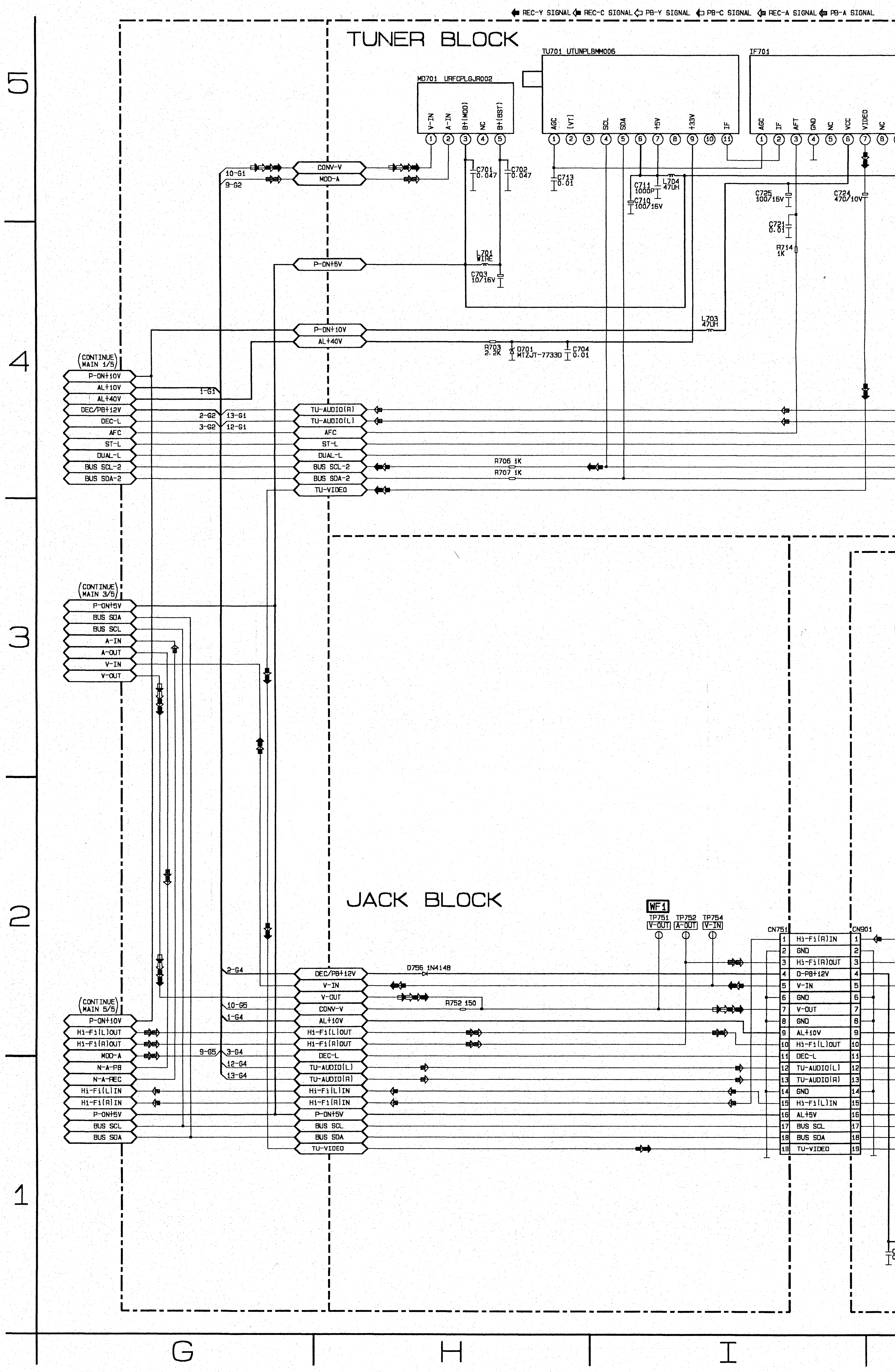
Main 1/5 Schematic Diagram

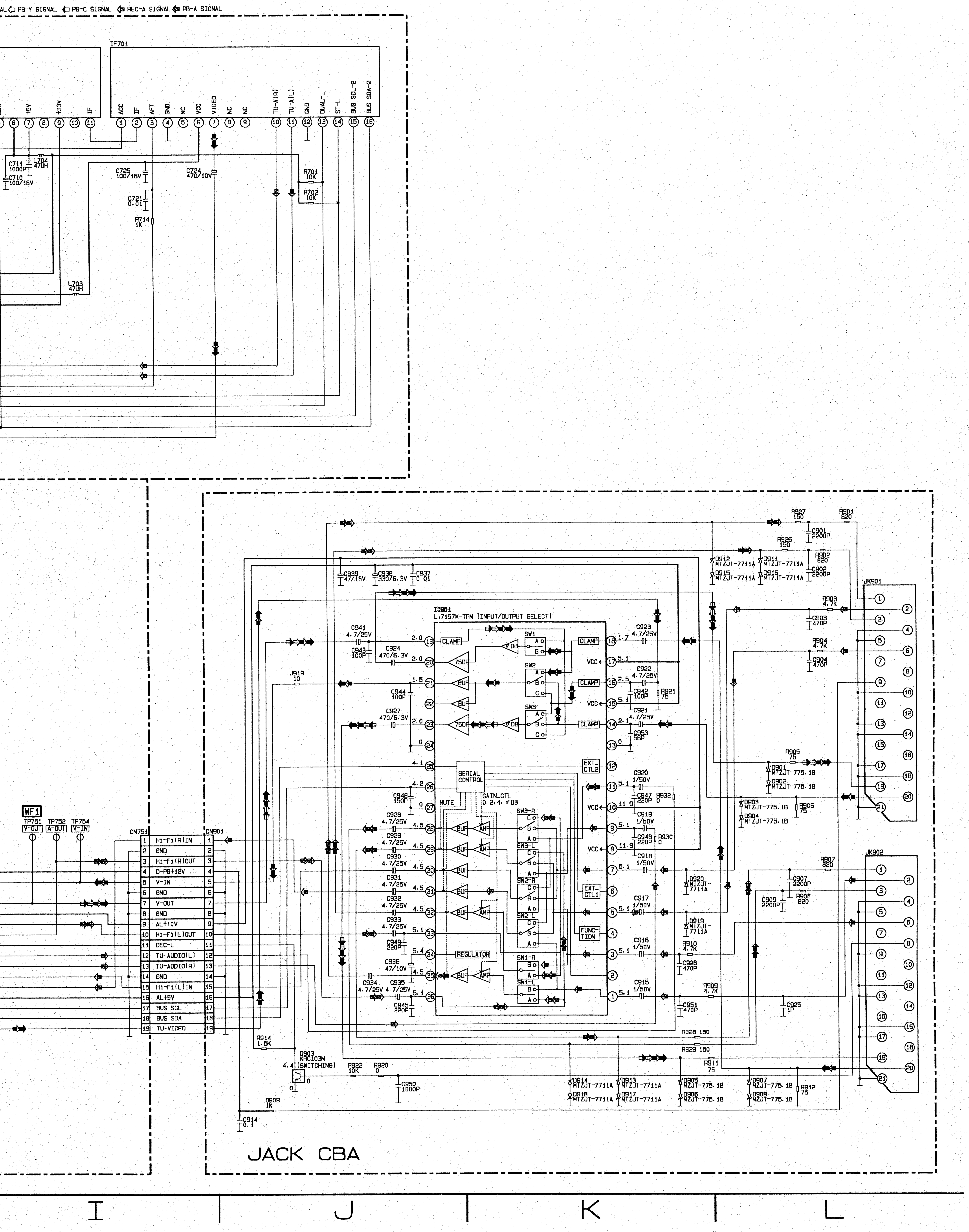


REC-A SIGNAL
PB-A SIGNAL
MAIN CBA
(TO FE HEAD) CN501
FE-H
FE-H-GND
(TO ACE HEAD / LOADING MOTOR) CN502
P-ON+5V
D-GND
D-PG
AL+12V
D-FG
GND
D-CONT
NC
LD-M(+)
LD-M(-)
NC
AE-H
FE-H
A-COM
A-PB/REC
CTL+
CTL-
(CONTINUE MAIN 3/5)
AE-H
FE-H-GND
A-COM
A-PB/REC
(TO CAPSTAN MOTOR) CN503
C-F/R
P-ON+5V
AL+12V
C-FG
LD-SW
C-DRIVE
FG-GND
CM-GND
C551 330P
(CONTINUE MAIN 4/5)
AL+10V
AL+40V
AL+12V
P-ON+10V
AL-30V
F-1
F-2
P-ON-L
D-PB-L
D-PB+12V
P-DOWN-L
AL+5V
P-ON+5V
TIMER+5V
L501 47UH
IC503 KIA324P (OP AMP)
TP303 CTL
C522 3300P
R529 4.7K
R531 100K
R532 100K
C521 0.1
R533 100K
R534 10K
C520 0.022
R513 10K
R515 10K
C506 1000P
R538 4.7K
R519 22K
Q501 KTA1266 (SWITCHING)
C515 330P
D505 1N4148
D506 1N4148
R522 68K
C510 220P
R526 560K
C514 100P
R516 330K
C523 4700P
R530 39K
R523 1.2K
C512 10/16V
R525 10K
C509 3300P
R517 56K
R518 27K
C511 1000P
R521 270
R524 10K
C558 5600P
C513 47/6.3V
R539 4.7K
D504 1N4148
D503 1N4148
FP501 TVFD1C0FT024
SEARCH
START
END
SLP
OTR
SUN
MON
SW501 CH-UP
R541 10K
R545 100K
R610 1K
R548 10K
C524 27P
X501 32KHZ
C525 27P
R551 10K
NU
DEC-L
T-DAC
REMOCON
TEX
TX
VSS
VDD
VPP
BUS SDA
BUS SCL
P-ON-L
DEC/PB-L
V-MUTE-H
STILL/SLOW-L
IC501 QSMQ00RSN088 (MICROCONTROLLER 8BIT SERVO/SYSTEM CONTROL)
A-MUTE-H
REC-CTL(+)
REC-CTL(-)
C-DRIVE
BUS SDA-2
BUS SCL-2
C-F/R
H-A-SW
ROTA
RF-SW
ST-L
HI-FI-SW
DUAL-L
D-V SYNC
A-MODE
D-REC-H
REC-SW
AFC
V-ENV
END-S
VFDP
L502 47UH
C526 100/6.3V
C550 0.1
C527 0.022
WF2
TP302 RF-SW
R512 10K
R503 39
R504 39
R501 680K
R502 680K
TP507 END-S
C501 1000P
Q503 ST-319R2-B (END-S)
Q504 ST-319R2-B (ST-S)
TP506 ST-S
C502 1000P
R506 100K
R505 100K
TP505 T-REEL
Q514 ST-319R2-B (T-REEL)
R566 10K
R558 10K
R561 10K
SW505 SPPB610301 REC-SW
R598 4.7K
L504 WIRE
D551 SIR-56ST3F-M S-LED
Q509 2SC2120 (BUFFER)
R595 4.7K
SYSCON/TIMER/SERVO BLOCK
A
B
C
D
1
2
3
4
5


FUNCTION CBA
CN505
CN651
KEY-2
GND
KEY-1
24-D1
25-E2
R584 1.8K
R585 1K
R586 1.2K
R587 1.5K
SW501 CH-UP
SW502 POWER
SW504 SPEED
SW505 CH-DOWN
TP502 S-INH
TP501 GND
R651 1.8K
R652 1K
R653 1.2K
R654 1.5K
R655 2.2K
R656 3.9K
R657 2.2K
R658 3.9K
R659 8.2K
R660 22K
SW661 STOP/EJECT
SW652 FF
SW653 REW
SW654 PLAY
SW665 PAUSE
SW666 REC
SW657 AUTO RETURN
SW658 TODAY TIMER
SW659 START
SW660 END
UNLESS OTHERWISE SWITCHES ARE KSM0614B.
UNLESS OTHERWISE SWITCHES ARE KSM0614B.
FP501 TVFD1C0FT024
10G
9G
8G
7G
6G
5G
4G
3G
2G
1G
SUN
MON
TUE
WED
THU
FRI
SAT
WEEKLY
VCR
CATV
DTR
CH
SEARCH
START
END
DATE
AM
PM
SLP
OTR
C541 0.047
CN601
NOT CONNECT
GND
OSD-CLK
DAVN-L
VPS-V
P-ON+5V
GND
BUS SCL-2
BUS SDA-2
NC
31-B4
35-B3
88-F1
45-C1
45-C1
C602 0.1
CONTINUE MAIN 3/5
H-A-COMP
H-A-SW
RF-SW
V-ENV
C-SYNC
P-ON+5V
BUS SDA
BUS SCL
ROTA
A-MUTE-H
84-D4
47-C1
49-C1
58-D1
63-E3
22-A1
86-F1
87-F1
48-C1
44-C1
CONTINUE MAIN 2/5
P-ON+10V
AL+10V
AL+40V
D-PB+12V
DEC-L
AFC
ST-L
DUAL-L
BUS SCL-2
BUS SDA-2
15-A1
13-A1
14-A1
20-A1
36-B3
57-D1
50-C1
52-C1
CONTINUE MAIN 5/5
Hi-Fi-SW
A-MODE
A-MUTE-H
51-C1
54-D1
CONTINUE MAIN 3/5
P-ON+10V
D-REC-H
55-D1
CONTINUE MAIN 3/5
V-MUTE-H
D-V SYNC
VPS-V
43-B2
53-D1
88-F4
Q508 KRA103M (INVERTER)
Q506 KRC103M (INVERTER)
R583 100P
R616 WIRE
R575 22K
C536 1500P
R574 10K
63-F3
89-C5
C-CONT
LM-REV
LM-FWD
FF/REW-L
S-LED
C-FG
D-FG
EXTAL
XTAL
VSS
RESET
MP
D-PG
PB-CTL
C-SYNC
P-DOWN-L
T-REEL
NU
PG-DELAY/TEST
KEY-1
D-CONT
H-A-COMP
X502 13.3MHZ
C534 10P
C542 10P
29-B4
7-A4
61-B1
9-A3
2-A5
3-A5
4-A5
1-A5
28-B4
21-A1
62-C1
25-A5
IC504 TA7291S (LOADING MOTOR DRIVE)
OUT PUT
CTL
C539 0.1
C537 10/16V
R579 1
R578 1
R577 1
SW-P VR501 100K
C554 0.01
R573 22K
C549 0.022
Hi-Fi-SW
DUAL-L
D-V SYNC
A-MODE
D-REC-H
NU
REC-SW
AFC
V-ENV
END-S
ST-S
LD-SW
KEY-2
AVREF
AVSS
AVDD
C548 0.1
R509 WIRE
R563 10K
R570 100K
R571 WIRE
R572 1K
C530 22/10V
R597 47
C531 1/50V
SW507 KSM0511B RESET
R569 2.2K
Q505 KTC3199 (RESET)
R568 1.2K
IC501
MICROCONTROLLER 8BIT
SERVO/SYSTEM CONTROL
R558 10K
59-B1
R598 4.7K
R566 10K
R561 10K
SW506 SPPB610301 REC-SW
R562 10K
C529 330/6.3V
37-B3
RS501 PIC-26042LU
REMOTE SENSOR
R580 220
C538 33/6.3V
38-B2
39-B2
86-F3
87-F3
R507 2.2K
R582 10K
R506 10K
R508 2.2K
R581 1.5K
IC505 BR24C02F (MEMORY)
VCC
TEST
SCL
SDA
A0
A1
A2
Vss
DCK
D
E
F

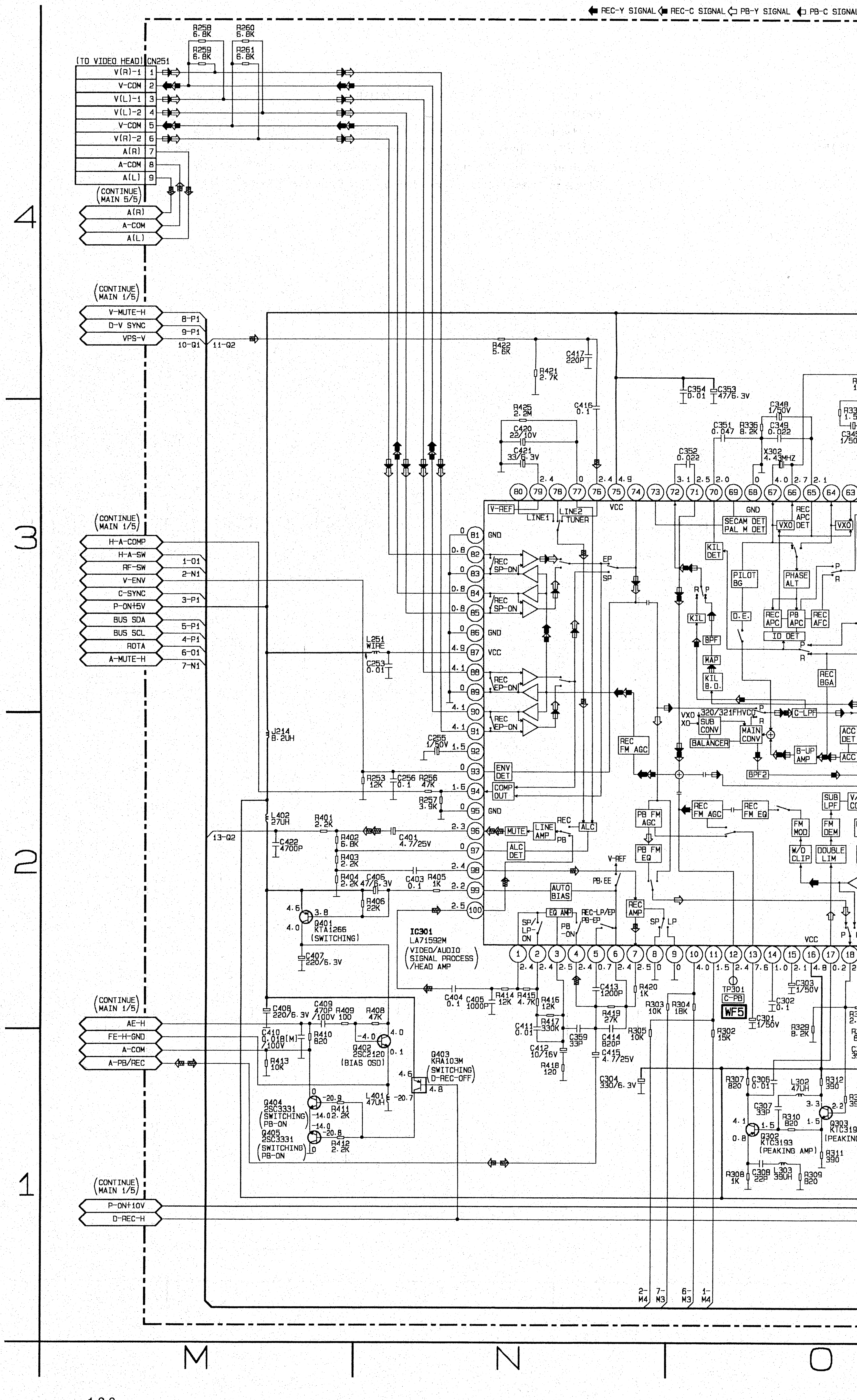
Main 2/5 Schematic Diagram

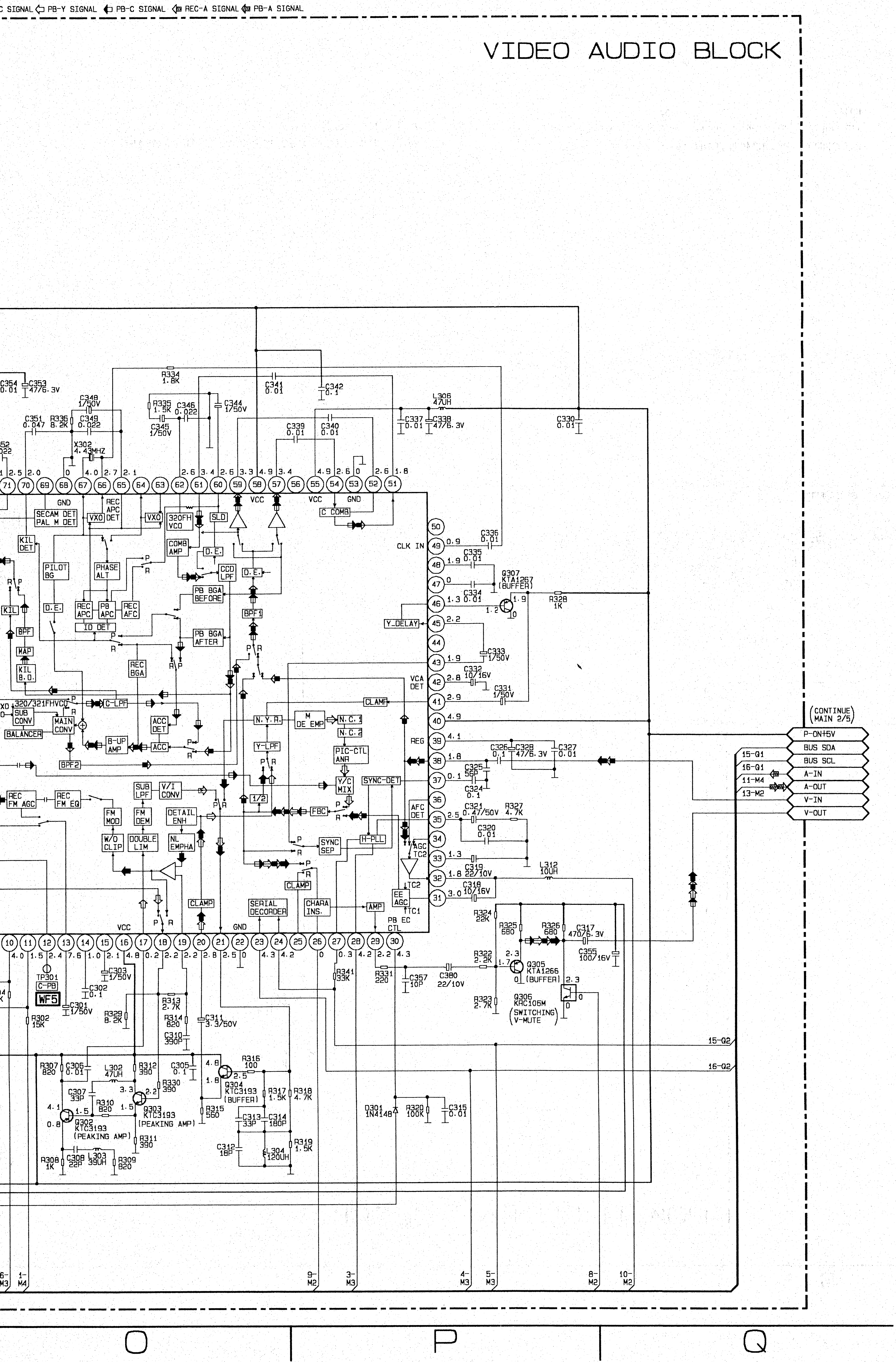

REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
REC-A SIGNAL
PB-A SIGNAL
TUNER BLOCK
TU701 UTUNPLBMM006
IF701
MD701 URFCPLGJR002
V-IN
A-IN
B+(MOD)
NC
B+(BST)
AGC
(VT)
SCL
SDA
+5V
+33V
IF
AGC
IF
AFT
GND
NC
VCC
VIDEO
NC
10-G1
9-G2
CONV-V
MOD-A
C701 0.047
C702 0.047
C713 0.01
C711 1000P
L704 47UH
C710 100/16V
C725 100/16V
C724 470/10V
C721 0.01
R714 1K
P-ON+5V
L701 WIRE
C703 10/16V
L703 47UH
P-ON+10V
AL+40V
R703 2.2K
D701 MTZJT-77330
C704 0.01
CONTINUE MAIN 1/5
P-ON+10V
AL+10V
AL+40V
DEC/PB+12V
DEC-L
AFC
ST-L
DUAL-L
BUS SCL-2
BUS SDA-2
1-G1
2-G2
3-G2
13-G1
12-G1
TU-AUDIO(R)
TU-AUDIO(L)
AFC
ST-L
DUAL-L
BUS SCL-2
BUS SDA-2
TU-VIDEO
R706 1K
R707 1K
CONTINUE MAIN 3/5
P-ON+5V
BUS SDA
BUS SCL
A-IN
A-OUT
V-IN
V-OUT
JACK BLOCK
WF1
TP751 V-OUT
TP752 A-OUT
TP754 V-IN
CN751
CN901
2-G4
DEC/PB+12V
D755 1N4148
V-IN
V-OUT
R752 150
10-G5
1-G4
CONV-V
AL+10V
Hi-Fi(L)OUT
Hi-Fi(R)OUT
DEC-L
9-G5
3-G4
12-G4
13-G4
TU-AUDIO(L)
TU-AUDIO(R)
Hi-Fi(L)IN
Hi-Fi(R)IN
P-ON+5V
BUS SCL
BUS SDA
TU-VIDEO
CONTINUE MAIN 5/5
P-ON+10V
Hi-Fi(L)OUT
Hi-Fi(R)OUT
MOD-A
N-A-PB
N-A-REC
Hi-Fi(L)IN
Hi-Fi(R)IN
P-ON+5V
BUS SCL
BUS SDA
1 Hi-Fi(R)IN
2 GND
3 Hi-Fi(R)OUT
4 D-PB+12V
5 V-IN
6 GND
7 V-OUT
8 GND
9 AL+10V
10 Hi-Fi(L)OUT
11 DEC-L
12 TU-AUDIO(L)
13 TU-AUDIO(R)
14 GND
15 Hi-Fi(L)IN
16 AL+5V
17 BUS SCL
18 BUS SDA
19 TU-VIDEO
5
4
3
2
1
G
H
I



PB-Y SIGNAL
PB-C SIGNAL
REC-A SIGNAL
PB-A SIGNAL
IF701
AGC
IF
AFT
GND
NC
VCC
VIDEO
TU-A(R)
TU-A(L)
DUAL-L
ST-L
BUS SCL-2
BUS SDA-2
+5V
+33V
C711 1000P
L704 47UH
C710 100/16V
C725 100/16V
C724 470/10V
C721 0.01
R714 1K
R701 10K
R702 10K
L703 47UH
IC901
LA7157M-TRM (INPUT/OUTPUT SELECT)
CLAMP
SW1
SW2
SW3
BUF
75Ω
-6DB
SERIAL CONTROL
MUTE
GAIN CTL 0.2.4.6DB
EXT CTL2
EXT CTL1
FUNC-TION
REGULATOR
AMP
SW3-R
SW3-L
SW2-R
SW2-L
SW1-R
SW1-L
VCC
C941 4.7/25V
C943 100P
C924 470/6.3V
J919 10
C944 100P
C927 470/6.3V
C948 150P
C928 4.7/25V
C929 4.7/25V
C930 4.7/25V
C931 4.7/25V
C932 4.7/25V
C933 4.7/25V
C949 220P
C936 47/10V
C934 4.7/25V
C935 4.7/25V
C945 220P
C939 47/16V
C938 330/6.3V
C937 0.01
C923 4.7/25V
C922 4.7/25V
C942 100P
R921 75
C921 4.7/25V
C953 56P
C920 1/50V
C947 220P
R932 0
C919 1/50V
C946 220P
R930 0
C918 1/50V
C917 1/50V
C916 1/50V
C915 1/50V
R910 4.7K
C926 470P
C951 470P
R909 4.7K
C925 1P
R927 150
R901 820
C901 2200P
R926 150
R902 820
C902 2200P
D912 MTZJT-7711A
D911 MTZJT-7711A
D915 MTZJT-7711A
D916 MTZJT-7711A
R903 4.7K
C903 470P
R904 4.7K
C904 470P
R905 75
D901 MTZJT-775.1B
D902 MTZJT-775.1B
D903 MTZJT-775.1B
D904 MTZJT-775.1B
R906 75
JK901
JK902
R907 820
C907 2200P
C909 2200P
R908 820
D920 MTZJT-7711A
D919 MTZJT-7711A
R928 150
R929 150
R911 75
D914 MTZJT-7711A
D918 MTZJT-7711A
D913 MTZJT-7711A
D917 MTZJT-7711A
D905 MZJT-775.1B
D906 MZJT-775.1B
D907 MZJT-775.1B
D908 MZJT-775.1B
R912 75
R914 1.5K
Q903 KRC103M (SWITCHING)
R922 10K
R920 0
C950 1000P
D909 1K
C914 0.1
WF1
TP751 V-OUT
TP752 A-OUT
TP754 V-IN
CN751
CN901
Hi-Fi(R)IN
GND
Hi-Fi(R)OUT
D-PB+12V
V-IN
V-OUT
AL+10V
Hi-Fi(L)OUT
DEC-L
TU-AUDIO(L)
TU-AUDIO(R)
Hi-Fi(L)IN
AL+5V
BUS SCL
BUS SDA
TU-VIDEO
JACK CBA
I
J
K
L

Main 3/5 Schematic Diagram


REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
(TO VIDEO HEAD) CN251
1 V(R)-1
2 V-COM
3 V(L)-1
4 V(L)-2
5 V-COM
6 V(R)-2
7 A(R)
8 A-COM
9 A(L)
R258 6.8K
R260 6.8K
R259 6.8K
R261 6.8K
(CONTINUE MAIN 5/5)
A(R)
A-COM
A(L)
(CONTINUE MAIN 1/5)
V-MUTE-H
D-V SYNC
VPS-V
8-P1
9-P1
10-Q1
11-Q2
H-A-COMP
H-A-SW
RF-SW
V-ENV
C-SYNC
P-ON+5V
BUS SDA
BUS SCL
ROTA
A-MUTE-H
1-O1
2-N1
3-P1
5-P1
4-P1
6-O1
7-N1
R422 5.6K
R421 2.7K
C417 220P
C416 0.1
R425 2.2M
C420 22/10V
C421 33/6.3V
C354 0.01
C353 47/6.3V
C348 1/50V
C351 0.047
R336 8.2K
C349 0.022
C352 0.022
X302 4.43MHZ
V-REF
LINE1
LINE2
TUNER
VCC
GND
SECAM DET
PAL M DET
VXO
REC APC DET
KIL DET
PILOT BG
PHASE ALT
KIL
D.E.
REC APC
PB APC
REC AFC
ID DET
BPF
MAP
KIL B.O.
REC BGA
VXO 320/321FHVCO
XO
SUB CONV
BALANCER
MAIN CONV
C-LPF
B-UP AMP
BPF2
ACC DET
ACC
REC SP-ON
REC EP-ON
EP
SP
ENV DET
COMP OUT
MUTE
LINE AMP
REC
PB
ALC
ALC DET
AUTO BIAS
EQ AMP
REC-LP/EP
PB-EP
SP/LP-ON
PB-ON
REC AMP
REC FM AGC
PB FM AGC
PB FM EQ
REC FM EQ
FM MOD
FM DEM
W/O CLIP
DOUBLE LIM
SUB LPF
V-REF
PB.EE
L251 WIRE
C253 0.01
J214 8.2UH
C255 1/50V
R253 12K
C256 0.1
R256 47K
R257 3.9K
L402 27UH
C422 4700P
R401 2.2K
R402 6.8K
R403 2.2K
R404 2.2K
C406 47/6.3V
C401 4.7/25V
C403 0.1
R405 1K
R406 22K
Q401 KTA1266 (SWITCHING)
C407 220/6.3V
IC301 LA71592M (VIDEO/AUDIO SIGNAL PROCESS /HEAD AMP)
13-Q2
C408 220/6.3V
C409 470P /100V
R409 100
R408 47K
C410 0.018(M) /100V
R410 820
R413 10K
Q402 2SC2120 (BIAS OSC)
Q403 KRA103M (SWITCHING) D-REC-OFF
Q404 2SC3331 (SWITCHING) PB-ON
Q405 2SC3331 (SWITCHING) PB-ON
R411 2.2K
R412 2.2K
L401 47UH
C404 0.1
C405 1000P
R414 12K
R415 4.7K
R416 12K
R417 330K
C411 0.01
C412 10/16V
R418 120
C359 33P
C413 1200P
R419 27K
C414 820P
C415 4.7/25V
R420 1K
R303 10K
R304 18K
R305 10K
C304 330/6.3V
TP301 C-PB
WF5
R302 15K
C301 1/50V
C302 0.1
C303 1/50V
R329 8.2K
R307 820
C306 0.01
L302 47UH
R312 390
C307 33P
R310 820
Q302 KTC3193 (PEAKING AMP)
Q303 KTC319 (PEAKIN
R311 390
R308 1K
C308 22P
L303 39UH
R309 820
(CONTINUE MAIN 1/5)
AE-H
FE-H-GND
A-COM
A-PB/REC
P-ON+10V
D-REC-H
2-M4
7-M3
6-M3
1-M4
4
3
2
1
M
N
O

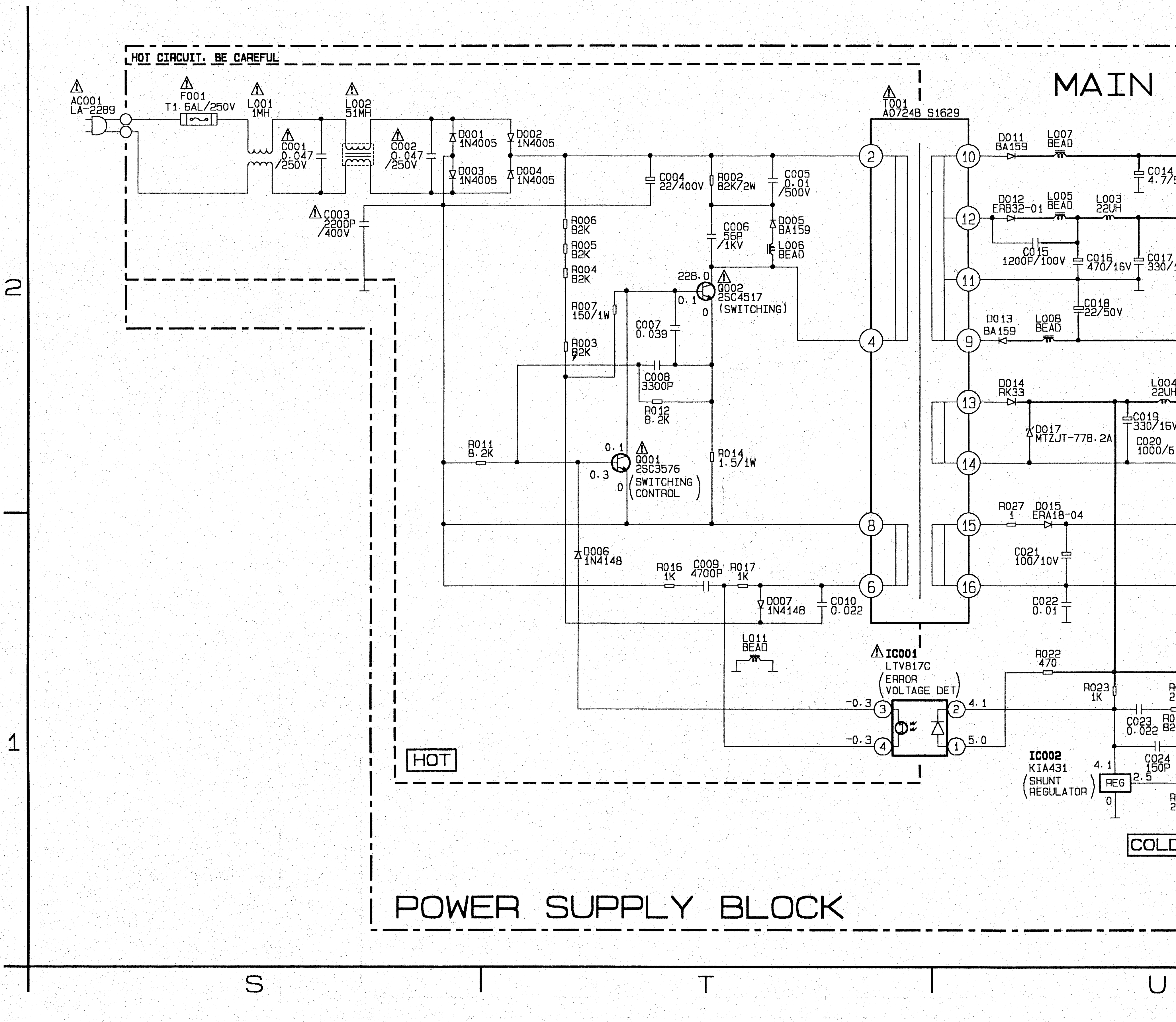


C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
REC-A SIGNAL
PB-A SIGNAL
VIDEO AUDIO BLOCK
R334 1.8K
C354 0.01
C353 47/6.3V
C348 1/50V
C351 0.047
R336 8.2K
C349 0.022
X302 4.43MHZ
R335 1.5K
C346 0.022
C345 1/50V
C344 1/50V
C341 0.01
C342 0.1
C339 0.01
C340 0.01
L306 47UH
C337 0.01
C338 47/6.3V
C330 0.01
VCC
GND
SECAM DET PAL M DET
VXO
REC APC DET
320FH VCO
SLD
C COMB
KIL DET
PILOT BG
PHASE ALT
COMB AMP
D.E.
CCD LPF
PB BGA BEFORE
KIL
D.E.
REC APC
PB APC
REC AFC
ID DET
BPF
MAP
KIL B.D.
PB BGA AFTER
BPF1
REC BGA
320/321FHVCO
SUB CONV
MAIN CONV
BALANCER
C-LPF
ACC DET
B-UP AMP
ACC
BPF2
N.Y.R.
M DE EMP
N.C.1
N.C.2
CLAMP
Y-LPF
PIC-CTL ANR
Y/C MIX
SYNC-DET
REC FM AGC
REC FM EQ
SUB LPF
V/I CONV
FM MOD
FM DEM
DETAIL ENH
1/2
FBC
W/D CLIP
DOUBLE LIM
NL EMPHA
SYNC SEP
H-PLL
CLAMP
AGC TC2
CLAMP
SERIAL DECORDER
CHARA INS.
AMP
EE AGC
TC2
TC1
PB EC CTL
CLK IN
Y-DELAY
VCA DET
REG
AFC DET
C336 0.01
C335 0.01
Q307 KTA1267 (BUFFER)
C334 0.01
R328 1K
C333 1/50V
C332 10/16V
C331 1/50V
C326 0.1
C328 47/6.3V
C327 0.01
C325 56P
C324 0.1
C321 0.47/50V
R327 4.7K
C320 0.01
C319 22/10V
L312 10UH
C318 10/16V
R324 22K
R325 680
R326 680
C317 470/6.3V
C355 100/16V
R322 2.2K
Q305 KTA1266 (BUFFER)
R323 2.7K
Q306 KRC105M (SWITCHING) V-MUTE
R331 220
R341 33K
C357 10P
C380 22/10V
(CONTINUE MAIN 2/5)
P-ON+5V
BUS SDA
BUS SCL
A-IN
A-OUT
V-IN
V-OUT
15-Q1
16-Q1
11-M4
13-M2
15-Q2
16-Q2
TP301 C-PB
WF5
C303 1/50V
C302 0.1
C301 1/50V
R302 15K
R329 8.2K
R313 2.7K
R314 820
C310 390P
C311 3.3/50V
R307 820
C306 0.01
L302 47UH
R312 390
C305 0.1
R316 100
Q304 KTC3193 (BUFFER)
R317 1.5K
R318 4.7K
C307 33P
R310 820
R330 390
Q303 KTC3193 (PEAKING AMP)
R315 560
C313 33P
C314 180P
Q302 KTC3193 (PEAKING AMP)
R311 390
C312 18P
L304 120UH
R319 1.5K
R308 1K
C308 22P
L303 39UH
R309 820
D301 1N4148
R320 100K
C315 0.01
6-M3
1-M4
9-M2
3-M3
4-M3
5-M3
8-M2
10-M2
O
P
Q

Main 4/5 Schematic Diagram

NOTE :
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,

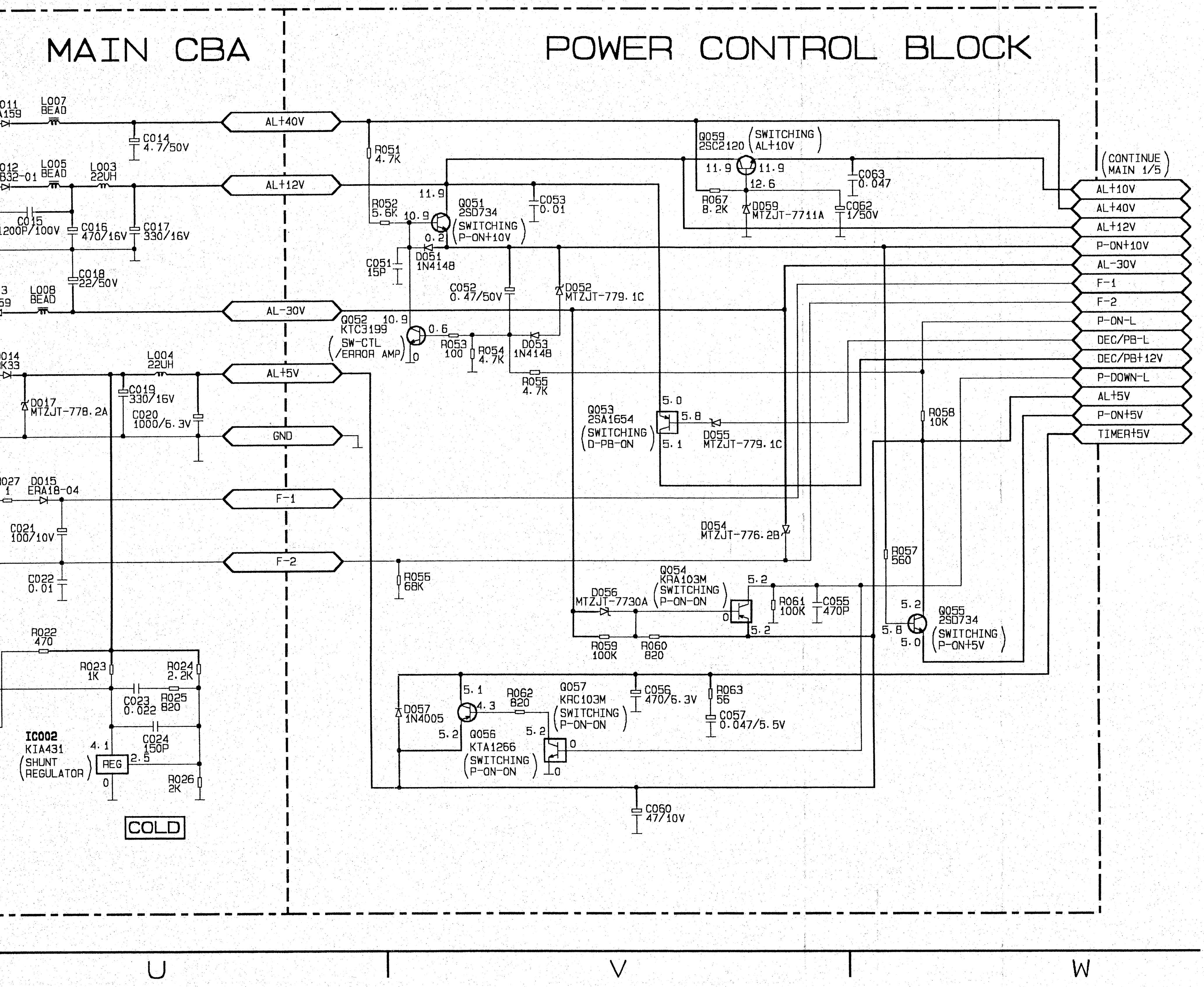

HOT CIRCUIT. BE CAREFUL
MAIN
AC001 LA-2289
F001 T1.6AL/250V
L001 1MH
L002 51MH
C001 0.047 /250V
C002 0.047 /250V
C003 2200P /400V
D001 1N4005
D002 1N4005
D003 1N4005
D004 1N4005
C004 22/400V
R002 82K/2W
C005 0.01 /500V
C006 56P /1KV
D005 BA159
L006 BEAD
R006 82K
R005 82K
R004 82K
R007 150/1W
R003 82K
228.0
0.1
0
Q002 2SC4517 (SWITCHING)
C007 0.039
C008 3300P
R012 8.2K
R011 8.2K
0.1
0.3
0
Q001 2SC3576 (SWITCHING CONTROL)
R014 1.5/1W
D006 1N4148
R016 1K
C009 4700P
R017 1K
D007 1N4148
C010 0.022
L011 BEAD
T001 A0724B S1629
2
4
8
6
10
12
11
9
13
14
15
16
D011 BA159
L007 BEAD
C014 4.7/5
D012 ERB32-01
L005 BEAD
L003 22UH
C015 1200P/100V
C016 470/16V
C017 330/
C018 22/50V
D013 BA159
L008 BEAD
D014 RK33
L004 22UH
D017 MTZJT-778.2A
C019 330/16V
C020 1000/6
R027 1
D015 ERA18-04
C021 100/10V
C022 0.01
IC001 LTV817C (ERROR VOLTAGE DET)
-0.3
-0.3
4.1
5.0
R022 470
R023 1K
C023 0.022
C024 150P
IC002 KIA431 (SHUNT REGULATOR)
REG
4.1
2.5
0
HOT
COLD
POWER SUPPLY BLOCK
2
1
S
T
U

RE HAZARD,

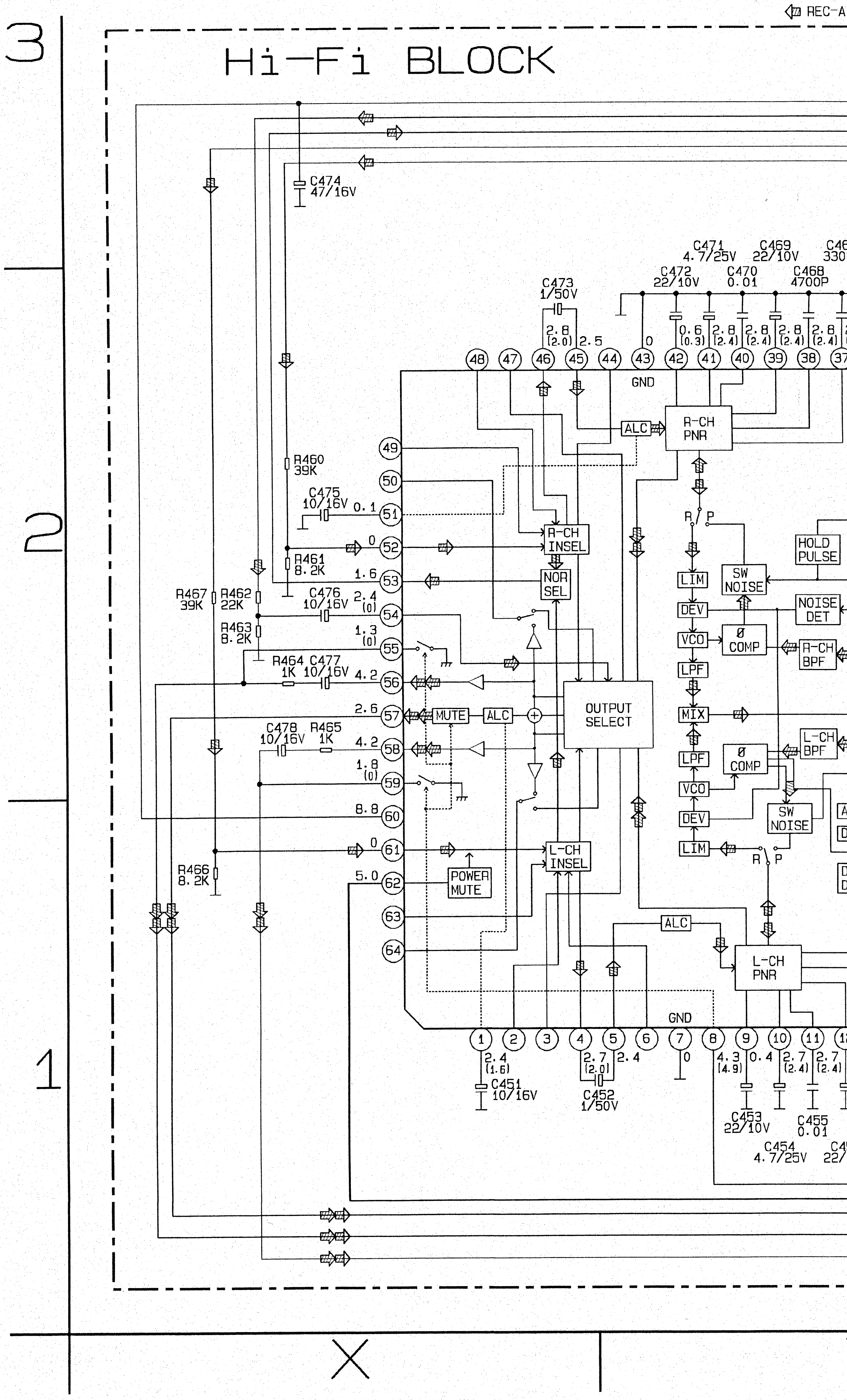
REPLACE ONLY WITH THE SAME TYPE FUSE.

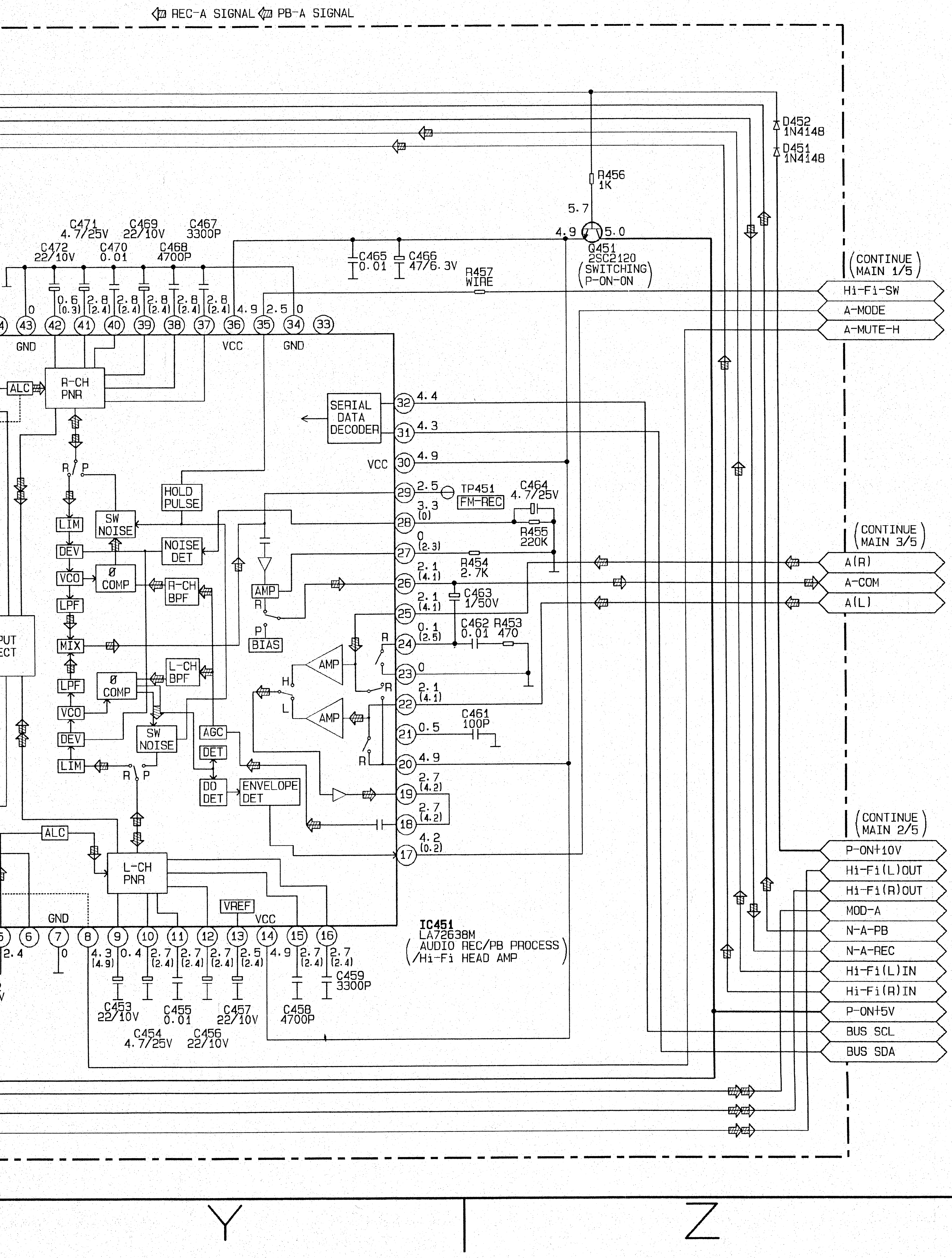
CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

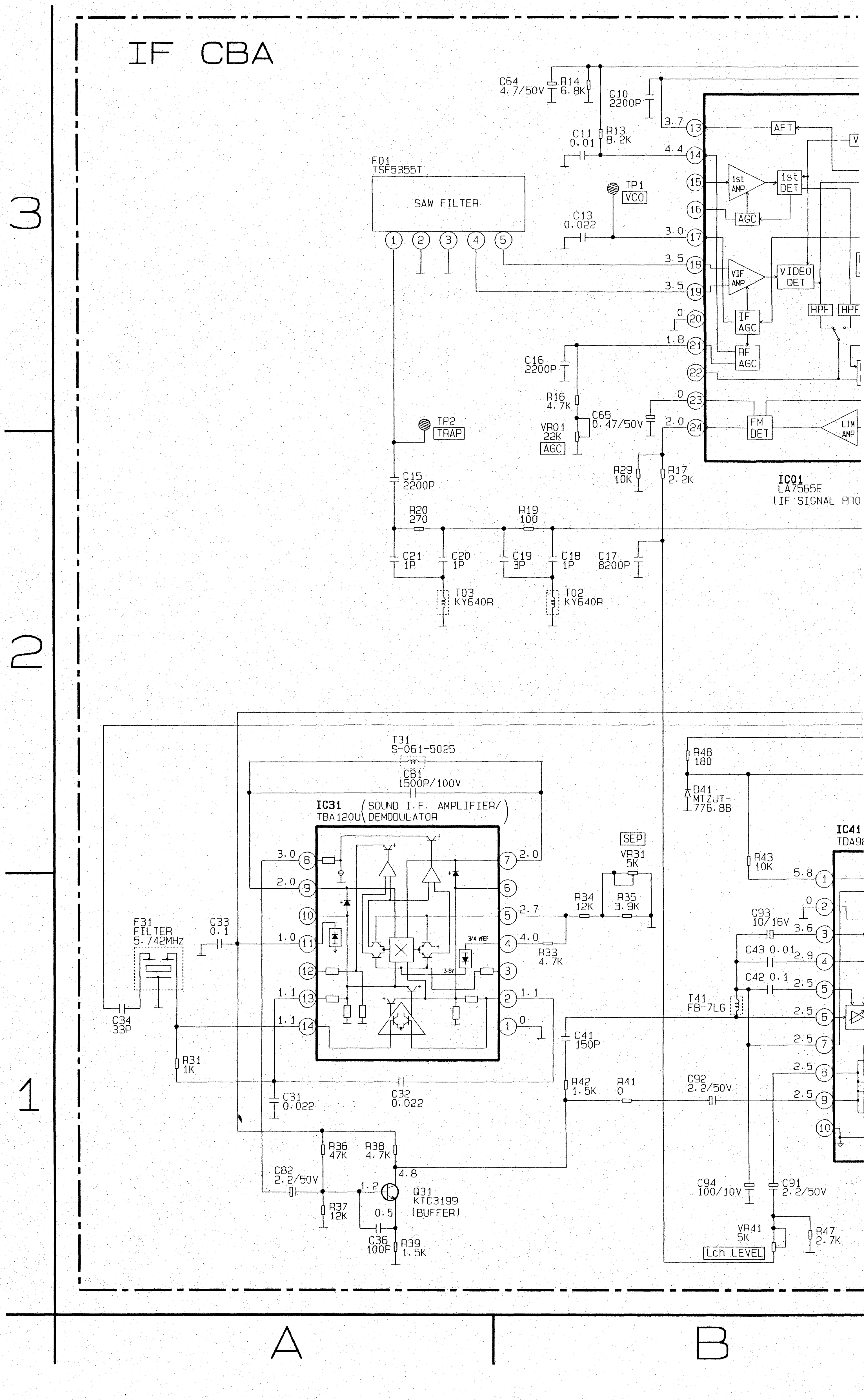

MAIN CBA
POWER CONTROL BLOCK
L007 BEAD
C014 4.7/50V
L005 BEAD
L003 22UH
C015 1200P/100V
C016 470/16V
C017 330/16V
C018 22/50V
L008 BEAD
L004 22UH
D017 MTZJT-778.2A
C019 330/16V
C020 1000/6.3V
D015 ERA18-04
C021 100/10V
C022 0.01
R022 470
R023 1K
R024 2.2K
C023 0.022
R025 820
C024 150P
IC002 KIA431 (SHUNT REGULATOR)
REG
R026 2K
COLD
AL+40V
AL+12V
AL-30V
AL+5V
GND
F-1
F-2
R051 4.7K
R052 5.6K
Q051 2SD734 (SWITCHING P-ON+10V)
C053 0.01
C051 15P
D051 1N4148
C052 0.47/50V
D052 MTZJT-779.1C
Q052 KTC3199 (SW-CTL /ERROR AMP)
R053 100
R054 4.7K
D053 1N4148
R055 4.7K
Q059 2SC2120 (SWITCHING AL+10V)
R067 8.2K
D059 MTZJT-7711A
C063 0.047
C062 1/50V
Q053 2SA1654 (SWITCHING D-PB-ON)
D055 MTZJT-779.1C
D054 MTZJT-776.2B
R056 68K
Q054 KRA103M (SWITCHING P-ON-ON)
D056 MTZJT-7730A
R061 100K
C055 470P
R059 100K
R060 820
R057 560
R058 10K
Q055 2SD734 (SWITCHING P-ON+5V)
D057 1N4005
Q056 KTA1266 (SWITCHING P-ON-ON)
R062 820
Q057 KRC103M (SWITCHING P-ON-ON)
C056 470/6.3V
R063 56
C057 0.047/5.5V
C060 47/10V
(CONTINUE MAIN 1/5)
AL+10V
AL+40V
AL+12V
P-ON+10V
AL-30V
F-1
F-2
P-ON-L
DEC/PB-L
DEC/PB+12V
P-DOWN-L
AL+5V
P-ON+5V
TIMER+5V
U
V
W

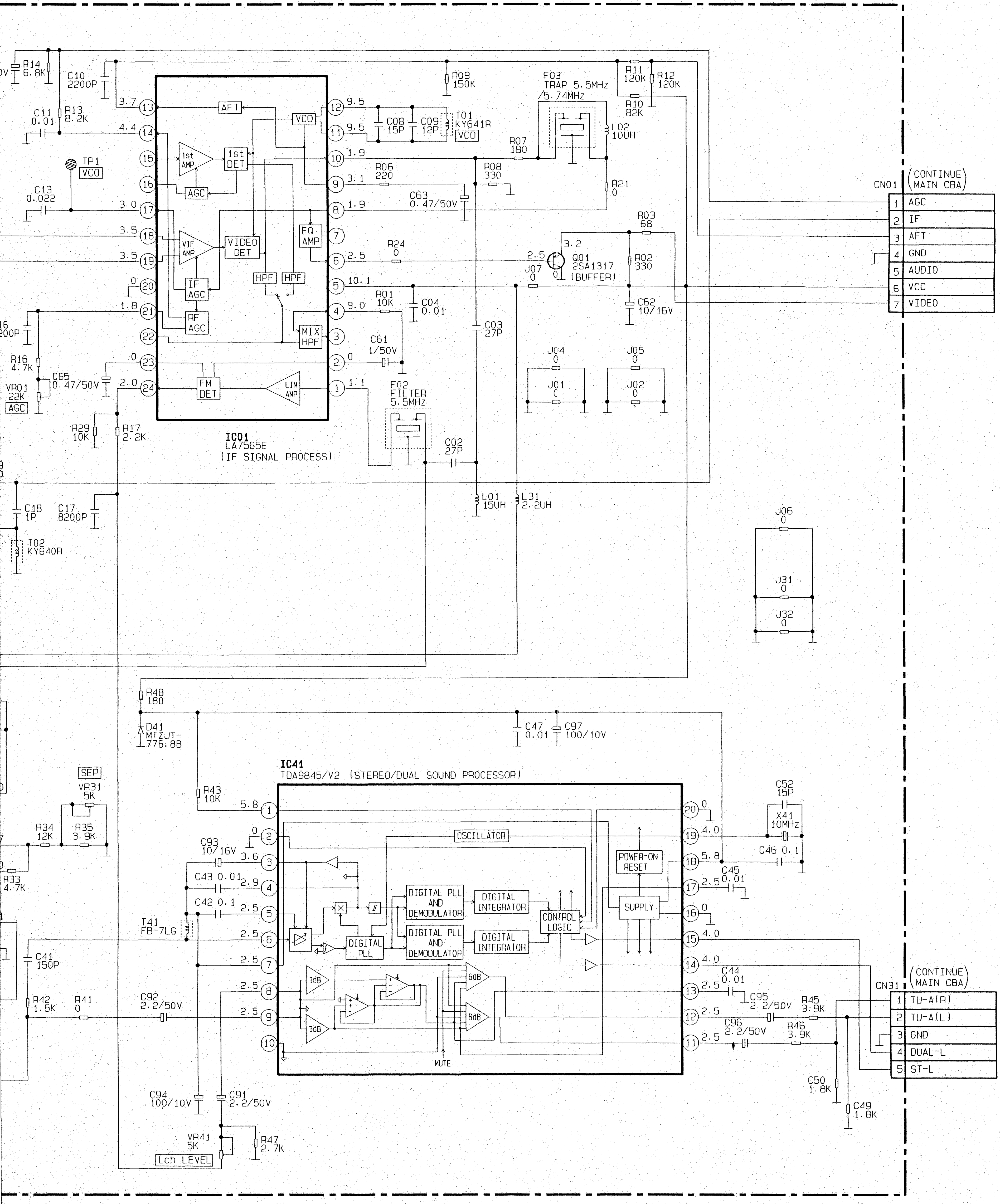
Main 5/5 Schematic Diagram


3
2
1
X
REC-A
Hi-Fi BLOCK
C474
47/16V
C471
4.7/25V
C469
22/10V
C472
22/10V
C470
0.01
C468
4700P
C473
1/50V
2.8
(2.0)
2.5
0
0.6
(0.3)
2.8
(2.4)
GND
R-CH
PNR
ALC
R460
39K
C475
10/16V
0.1
R-CH
INSEL
R/P
HOLD
PULSE
R461
8.2K
1.6
NOR
SEL
SW
NOISE
LIM
R467
39K
R462
22K
C476
10/16V
2.4
(0)
DEV
NOISE
DET
R463
8.2K
1.3
(0)
VCO
Ø
COMP
R-CH
BPF
R464
1K
C477
10/16V
4.2
LPF
OUTPUT
SELECT
2.6
MUTE
MIX
C478
10/16V
R465
1K
4.2
L-CH
BPF
1.8
(0)
8.8
R466
8.2K
5.0
POWER
MUTE
L-CH
INSEL
R P
L-CH
PNR
4.3
(4.9)
0.4
2.7
(2.4)
2.4
(1.6)
C451
10/16V
2.7
(2.0)
C452
1/50V
C453
22/10V
C455
0.01
C454
4.7/25V


REC-A SIGNAL
PB-A SIGNAL
D452 1N4148
D451 1N4148
R456 1K
5.7
4.9
5.0
Q451 2SC2120 (SWITCHING P-ON-ON)
C471 4.7/25V
C469 22/10V
C467 3300P
C472 22/10V
C470 0.01
C468 4700P
C465 0.01
C466 47/6.3V
R457 WIRE
(CONTINUE MAIN 1/5)
Hi-Fi-SW
A-MODE
A-MUTE-H
GND
VCC
GND
ALC
R-CH PNR
SERIAL DATA DECODER
4.4
4.3
VCC
4.9
2.5
TP451 FM-REC
C464 4.7/25V
3.3 (0)
R455 220K
(CONTINUE MAIN 3/5)
A(R)
A-COM
A(L)
0 (2.3)
R454 2.7K
2.1 (4.1)
C463 1/50V
2.1 (4.1)
0.1 (2.5)
C462 0.01
R453 470
HOLD PULSE
SW NOISE
LIM
DEV
VCO
LPF
MIX
LPF
VCO
DEV
LIM
NOISE DET
Ø COMP
R-CH BPF
L-CH BPF
Ø COMP
SW NOISE
AMP
BIAS
AMP
AMP
AGC
DET
DO DET
ENVELOPE DET
R/P
R P
H
L
R
R
0
2.1 (4.1)
0.5
C461 100P
4.9
2.7 (4.2)
2.7 (4.2)
4.2 (0.2)
(CONTINUE MAIN 2/5)
P-ON+10V
Hi-Fi(L)OUT
Hi-Fi(R)OUT
MOD-A
N-A-PB
N-A-REC
Hi-Fi(L)IN
Hi-Fi(R)IN
P-ON+5V
BUS SCL
BUS SDA
ALC
L-CH PNR
VREF
VCC
GND
IC451 LA72638M (AUDIO REC/PB PROCESS /Hi-Fi HEAD AMP)
PUT ECT
43 42 41 40 39 38 37 36 35 34 33
0 0.6 (0.3) 2.8 (2.4) 2.8 (2.4) 2.8 (2.4) 2.8 (2.4) 2.8 (2.4) 4.9 2.5 0
32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17
6 7 8 9 10 11 12 13 14 15 16
2.4 0 4.3 (4.9) 0.4 2.7 (2.4) 2.7 (2.4) 2.7 (2.4) 2.5 (2.4) 4.9 2.7 (2.4) 2.7 (2.4)
C459 3300P
C453 22/10V
C455 0.01
C457 22/10V
C458 4700P
C454 4.7/25V
C456 22/10V
Y
Z

IF Schematic Diagram


IF CBA
3
2
1
A
B
C64 4.7/50V
R14 6.8K
C10 2200P
C11 0.01
R13 8.2K
F01 TSF5355T
SAW FILTER
TP1 VCO
C13 0.022
AFT
1st AMP
1st DET
AGC
VIF AMP
VIDEO DET
IF AGC
RF AGC
HPF
FM DET
LIN AMP
C16 2200P
R16 4.7K
VR01 22K AGC
C65 0.47/50V
TP2 TRAP
R29 10K
R17 2.2K
IC01 LA7565E
(IF SIGNAL PRO
C15 2200P
R20 270
R19 100
C21 1P
C20 1P
C19 3P
C18 1P
C17 8200P
T03 KY640R
T02 KY640R
T31 S-061-5025
C81 1500P/100V
IC31 TBA120U (SOUND I.F. AMPLIFIER/ DEMODULATOR)
3/4 VREF
SEP
VR31 5K
R34 12K
R35 3.9K
R33 4.7K
F31 FILTER 5.742MHZ
C33 0.1
C34 33P
R31 1K
C31 0.022
C32 0.022
C41 150P
R42 1.5K
R41 0
R36 47K
R38 4.7K
C82 2.2/50V
R37 12K
Q31 KTC3199 (BUFFER)
C36 100P
R39 1.5K
R48 180
D41 MTZJT-776.8B
IC41 TDA9
R43 10K
C93 10/16V
C43 0.01
C42 0.1
T41 FB-7LG
C92 2.2/50V
C94 100/10V
C91 2.2/50V
VR41 5K Lch LEVEL
R47 2.7K


IC01
LA7565E
(IF SIGNAL PROCESS)
AFT
VCO
1st AMP
1st DET
AGC
VIF AMP
VIDEO DET
EQ AMP
HPF
IF AGC
RF AGC
MIX HPF
FM DET
LIN AMP
R14 6.8K
C10 2200P
C11 0.01
R13 8.2K
TP1 VCO
C13 0.022
R16 4.7K
C65 0.47/50V
VR01 22K AGC
R29 10K
R17 2.2K
C18 1P
C17 8200P
T02 KY640R
R09 150K
C08 15P
C09 12P
T01 KY641R VCO
R06 220
C63 0.47/50V
R08 330
R07 180
F03 TRAP 5.5MHz /5.74MHz
L02 10UH
R11 120K
R12 120K
R10 82K
R21 0
R03 68
R24 0
J07 0
Q01 2SA1317 (BUFFER)
R02 330
C62 10/16V
R01 10K
C04 0.01
C03 27P
C61 1/50V
F02 FILTER 5.5MHz
C02 27P
L01 15UH
L31 2.2UH
JC4 0
J05 0
J01 0
J02 0
J06 0
J31 0
J32 0
CN01
(CONTINUE MAIN CBA)
1 AGC
2 IF
3 AFT
4 GND
5 AUDIO
6 VCC
7 VIDEO
R48 180
D41 MTZJT-776.8B
C47 0.01
C97 100/10V
IC41
TDA9845/V2 (STEREO/DUAL SOUND PROCESSOR)
OSCILLATOR
POWER-ON RESET
SUPPLY
DIGITAL PLL AND DEMODULATOR
DIGITAL INTEGRATOR
CONTROL LOGIC
DIGITAL PLL
3dB
6dB
MUTE
SEP
VR31 5K
R34 12K
R35 3.9K
R33 4.7K
R43 10K
C93 10/16V
C43 0.01
C42 0.1
T41 FB-7LG
C41 150P
R42 1.5K
R41 0
C92 2.2/50V
C94 100/10V
C91 2.2/50V
VR41 5K
Lch LEVEL
R47 2.7K
C52 15P
X41 10MHz
C46 0.1
C45 0.01
C44 0.01
C95 2.2/50V
R45 3.9K
C96 2.2/50V
R46 3.9K
C50 1.8K
C49 1.8K
CN31
(CONTINUE MAIN CBA)
1 TU-A(R)
2 TU-A(L)
3 GND
4 DUAL-L
5 ST-L

B C D

Main CBA Top View

NOTE :

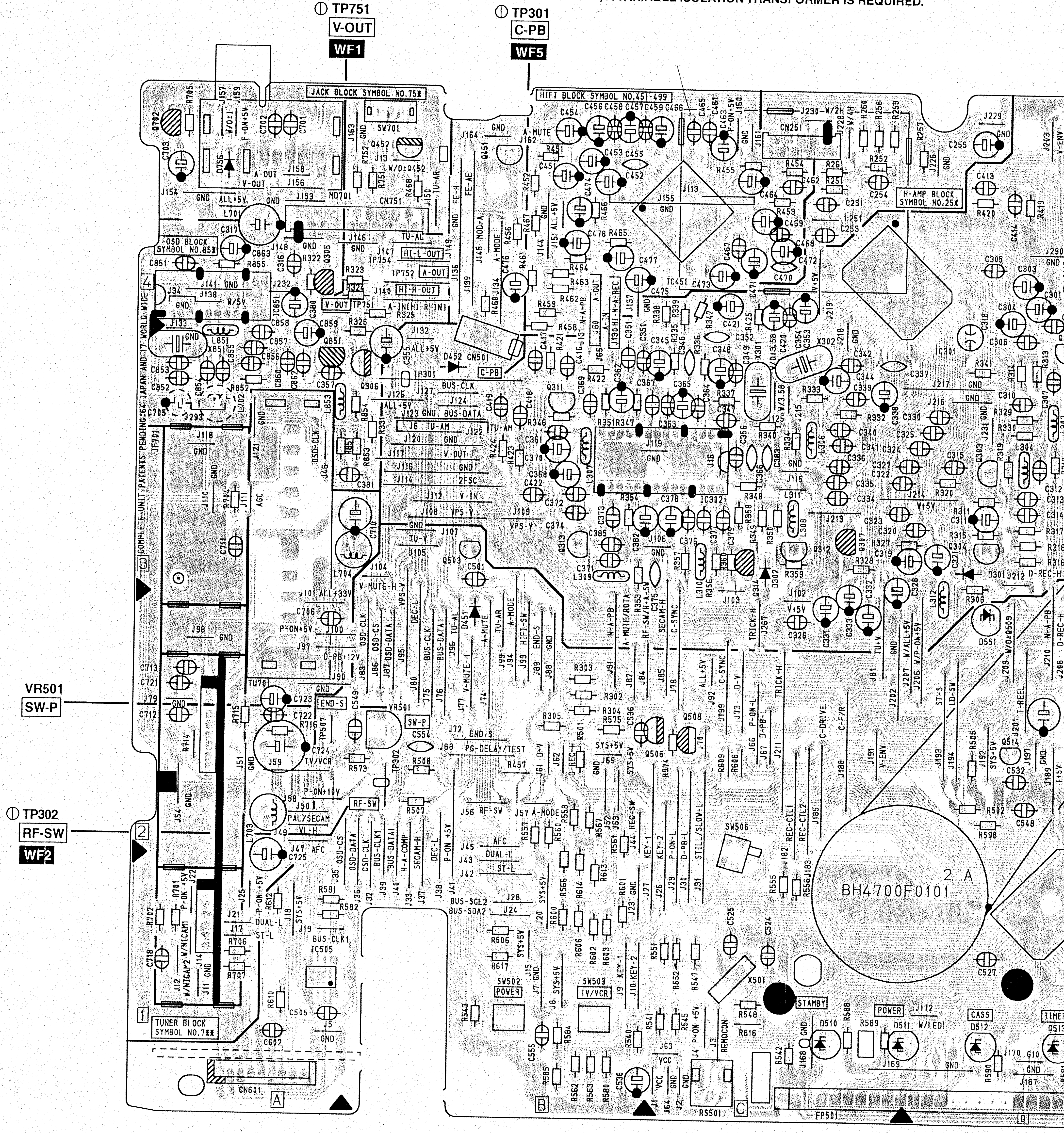
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

CAUTION

FOR CONTINUED F

REPLACE ONLY WIT



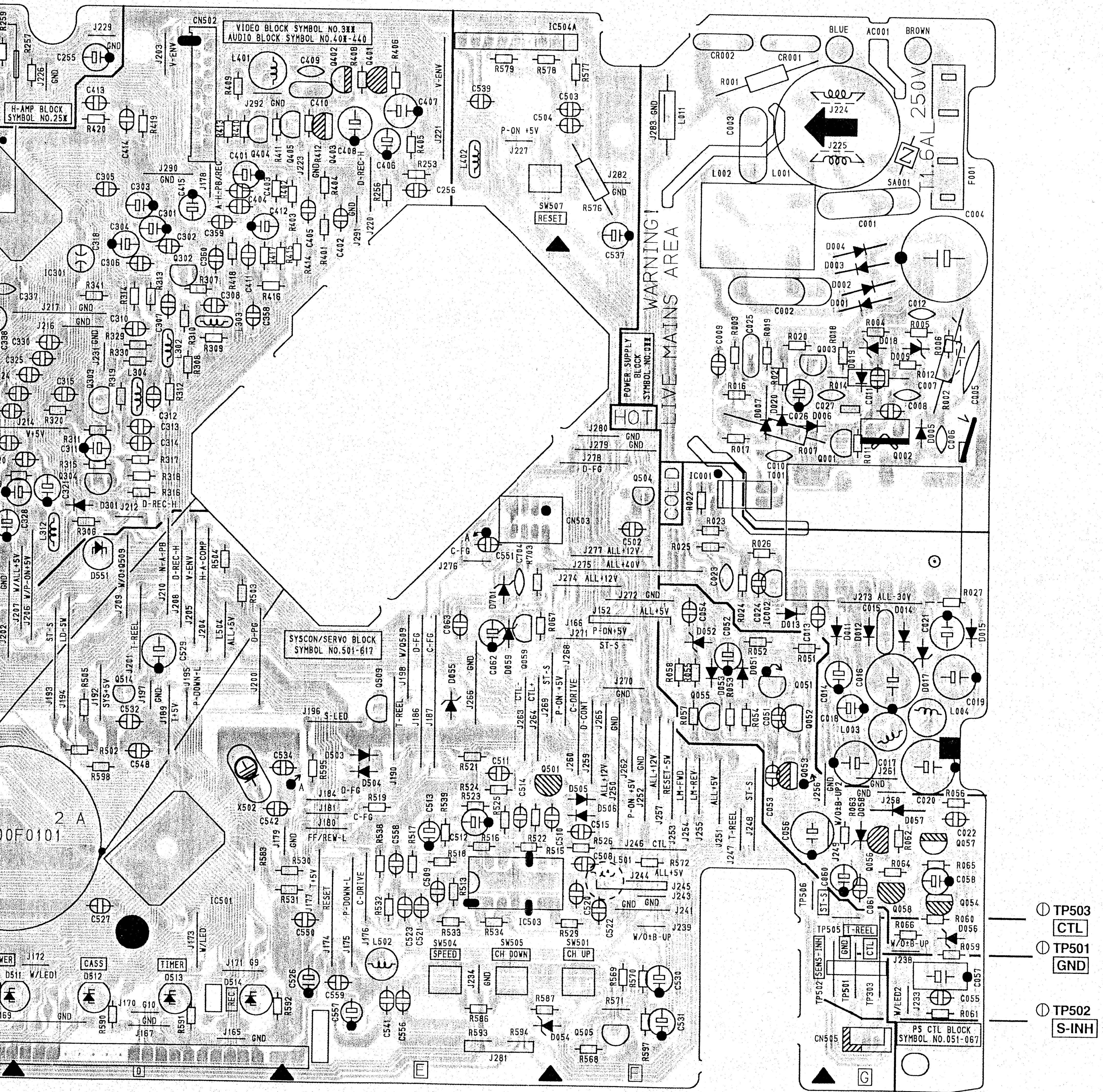
TP751
V-OUT
WF1
TP301
C-PB
WF5
VR501
SW-P
TP302
RF-SW
WF2
JACK BLOCK SYMBOL NO.75
HIFI BLOCK SYMBOL NO.451-499
OSD BLOCK SYMBOL NO.85
H-AMP BLOCK SYMBOL NO.25
TUNER BLOCK SYMBOL NO.7
COMPLETE UNIT PATENTS PENDING:64 JAPAN AND 17 WORLD WIDE
BH4700F0101
2 A
IC301
IC302
IC451
IC505
CN251
CN501
CN601
CN751
FP501
SW502 POWER
SW503 TV/VCR
SW506
SW701
X301
X501
STAMBY
POWER
CASS
TIMER
REMOCON
R5501
A
B
C
D
1
2
3
4

ING

OWER
USED.
INPUT
PPLY
RED.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

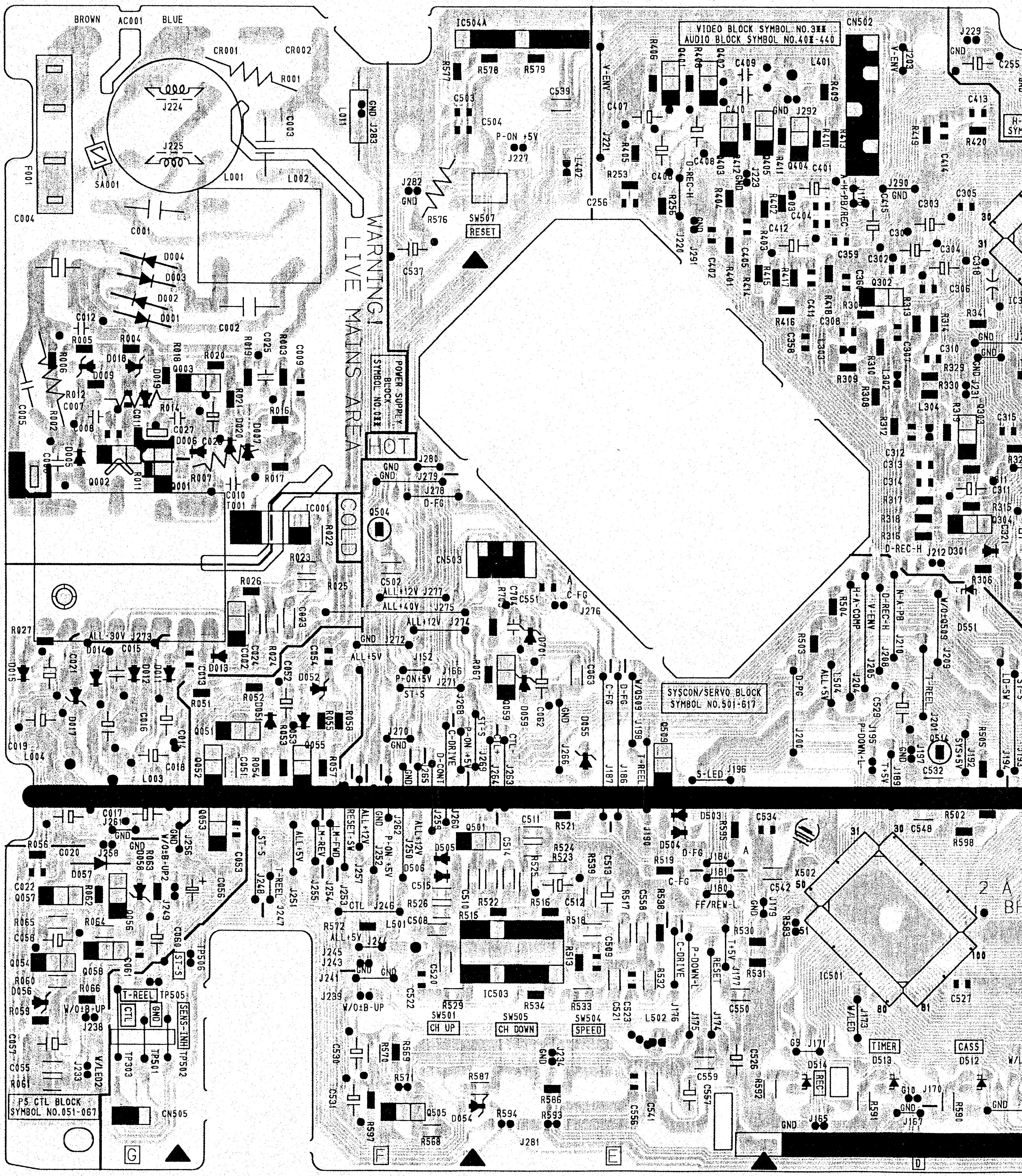

CN502
VIDEO BLOCK SYMBOL NO.3XX
AUDIO BLOCK SYMBOL NO.401-440
H-AMP BLOCK SYMBOL NO.25X
IC504A
SW507 RESET
WARNING ! LIVE MAINS AREA
POWER SUPPLY BLOCK SYMBOL NO.0XX
HOT
COLD
BLUE
AC001
BROWN
T1.6AL 250V
F001
SA001
IC001
T001
CN503
SYSCON/SERVO BLOCK SYMBOL NO.501-617
IC501
IC503
SW504 SPEED
SW505 CH DOWN
SW501 CH UP
TIMER
CASS
REC
PS CTL BLOCK SYMBOL NO.051-067
CN505
TP503 CTL
TP501 GND
TP502 S-INH
2 A
0F0101
D
E
F
G

Main CBA Bottom View

NOTE :
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

BECAUSE A HOT CHASSIS GROUND IS PRESENT IN THE POWER SUPPLY CIRCUIT , AN ISOLATION TRANSFORMER MUST BE USED. ALSO , IN ORDER TO HAVE THE ABILITY TO INCREASE THE INPUT SLOWLY , WHEN TROUBLESHOOTING THIS TYPE POWER SUPPLY CIRCUIT , A VARIABLE ISOLATION TRANSFORMER IS REQUIRED.

CAUTION
FOR CONTINUED PROTECTION AGAINST FIR
REPLACE ONLY WITH THE SAME TYPE FUSE.

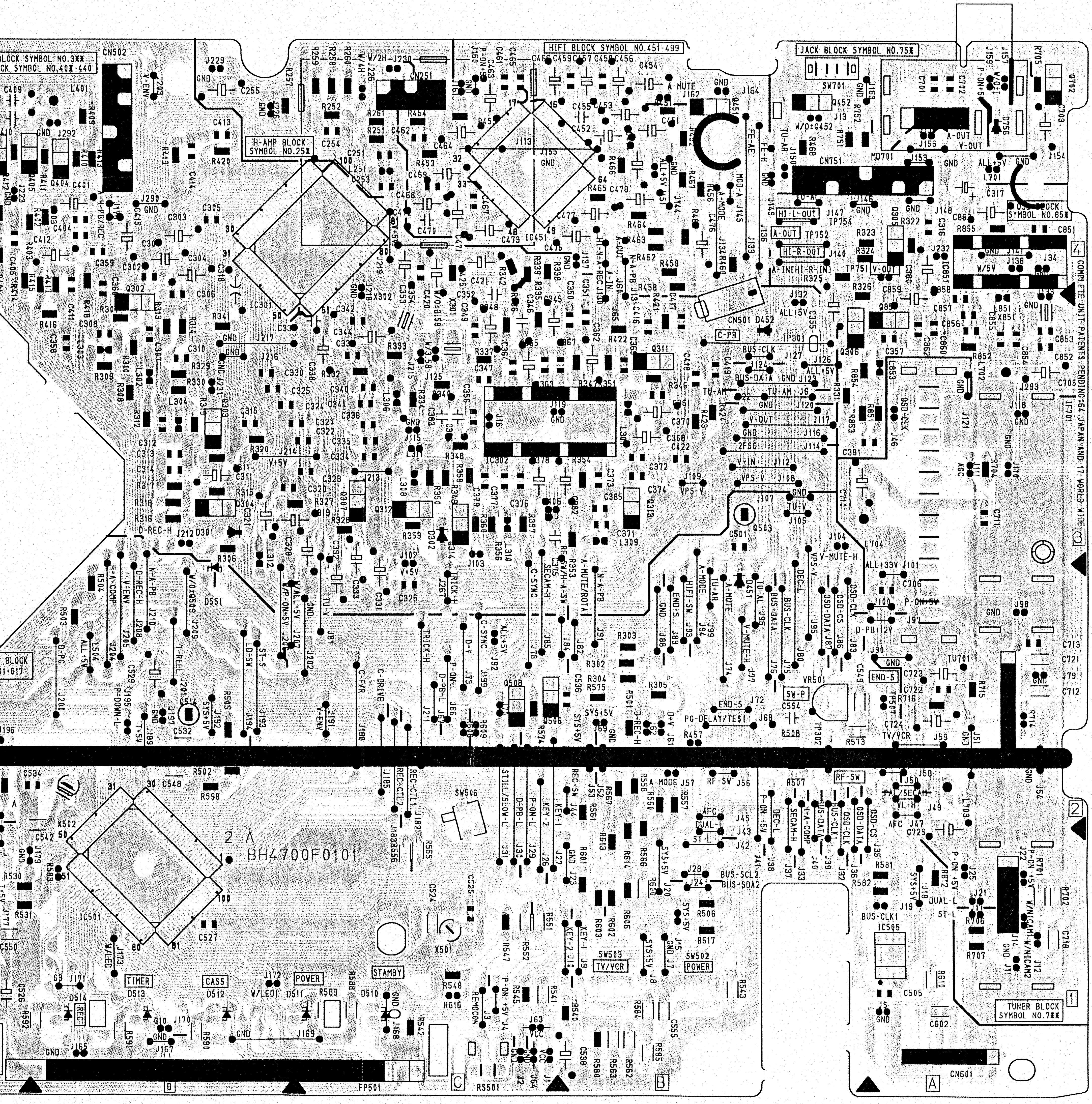

BROWN
AC001
BLUE
F001
SA001
J224
J225
L001
L002
WARNING!
LIVE MAINS AREA
HOT
COLD
POWER SUPPLY BLOCK SYMBOL NO.0XX
IC504A
SW507
RESET
VIDEO BLOCK SYMBOL NO.3XX
AUDIO BLOCK SYMBOL NO.40X-440
CN502
CN503
SYSCON/SERVO BLOCK SYMBOL NO.501-617
IC501
IC503
SW501
CH UP
SW505
CH DOWN
SW504
SPEED
TIMER
CASS
REC
PS CTL BLOCK SYMBOL NO.051-067
CN505
T-REEL
CTL
GND
SENS-INH
G
F
E
D

CAUTION

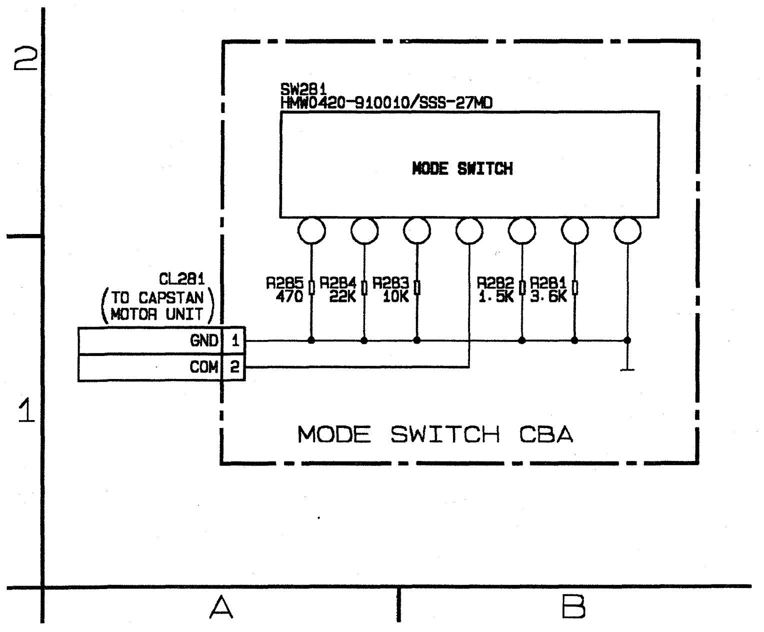
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !

Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit.
If Main Fuse (F001) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

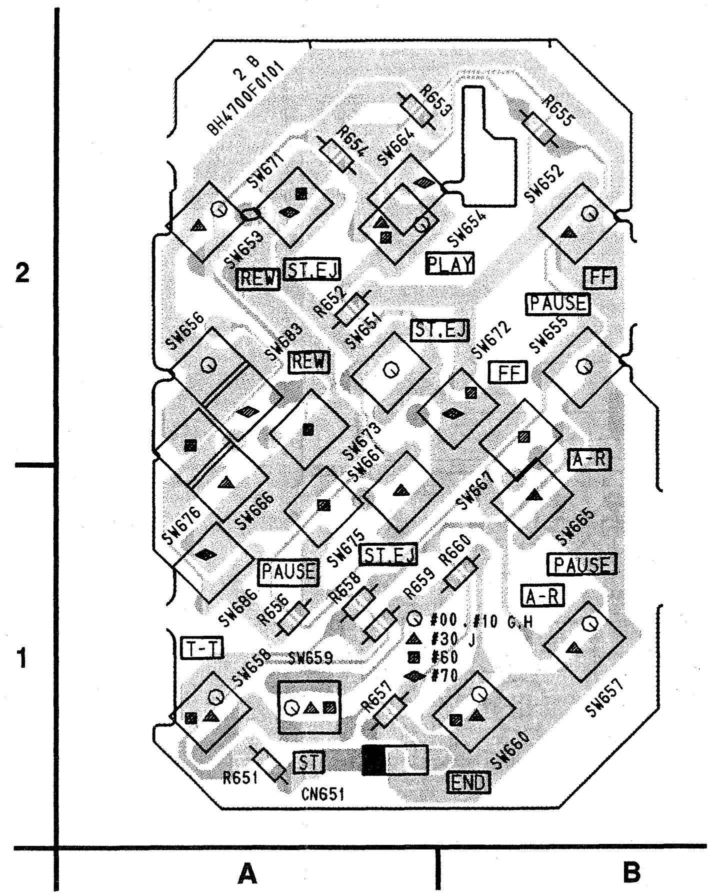

HIFI BLOCK SYMBOL NO.451-499
JACK BLOCK SYMBOL NO.75X
H-AMP BLOCK SYMBOL NO.25X
TUNER BLOCK SYMBOL NO.7XX
COMPLETE UNIT PATENTS PENDING:E4 JAPAN AND 17 WORLD WIDE
BH4700F0101
2 A
CN502
CN251
CN751
CN501
CN601
FP501
IC301
IC302
IC451
IC501
IC505
TIMER
CASS
POWER
STAMBY
REC
TV/VCR
SW509
SW502
SW506
SW701
X501
X502
1
2
3
4
A
B
C
D

Mode SW Schematic Diagram

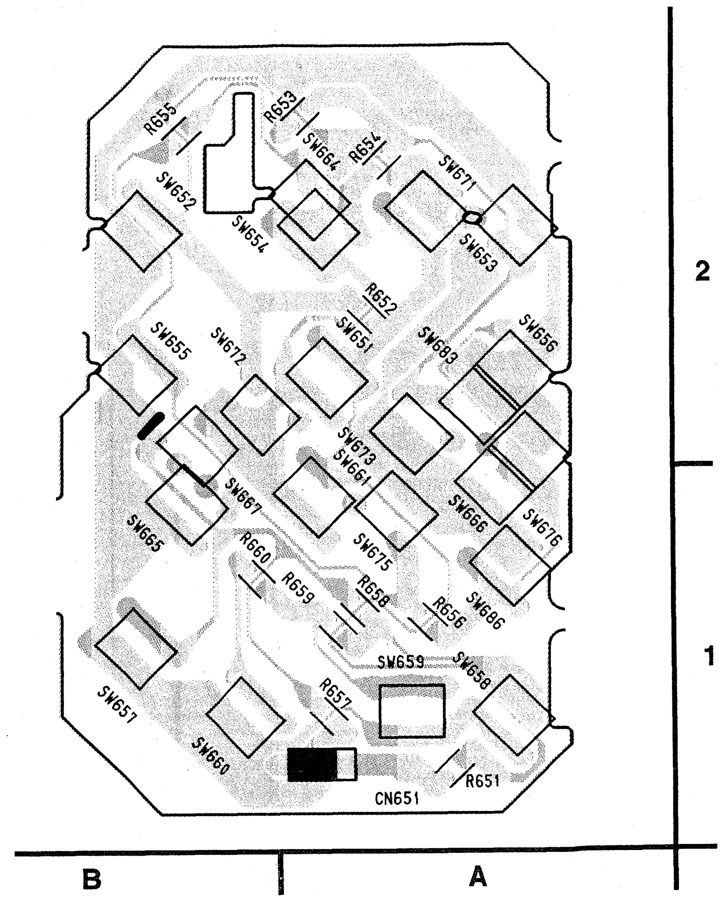

SW281
HMW0420-910010/SSS-27MD
MODE SWITCH
CL281
(TO CAPSTAN MOTOR UNIT)
GND 1
COM 2
R285 470
R284 22K
R283 10K
R282 1.5K
R281 3.6K
MODE SWITCH CBA
2
1
A
B

H4700SCMS

Function CBA Top View

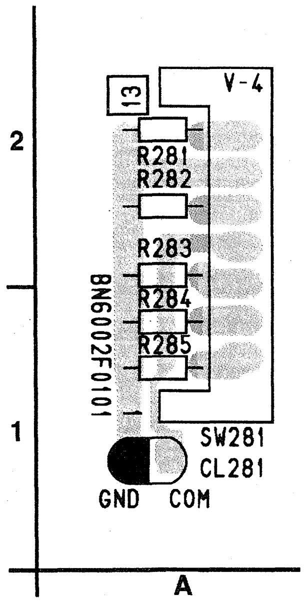

BH4700F0101
SW671
SW653
SW664
SW654
SW652
SW656
SW683
SW651
SW672
SW655
SW673
SW661
SW667
SW665
SW676
SW666
SW675
SW686
SW658
SW659
SW657
SW660
R651
R652
R653
R654
R655
R656
R657
R658
R659
R660
REW
ST.EJ
PLAY
FF
PAUSE
A-R
T-T
ST
END
CN651
#00,#10 G,H
#30 J
#60
#70
2
1
A
B

Function CBA Bottom View

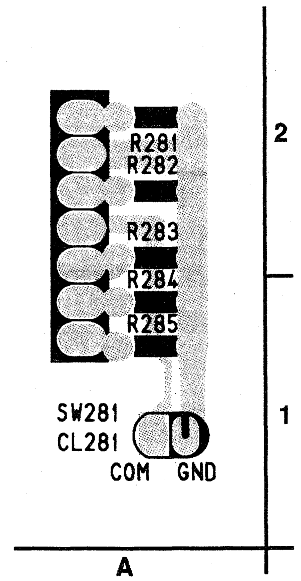

R655
R653
SW664
R654
SW671
SW652
SW654
SW653
R652
SW651
SW655
SW672
SW683
SW656
SW673
SW661
SW667
SW665
SW666
SW676
SW675
R660
R659
R658
R656
SW686
SW659
SW658
SW657
R657
SW660
CN651
R651
2
1
B
A

BH4700F01012-B

Mode SW CBA Top View

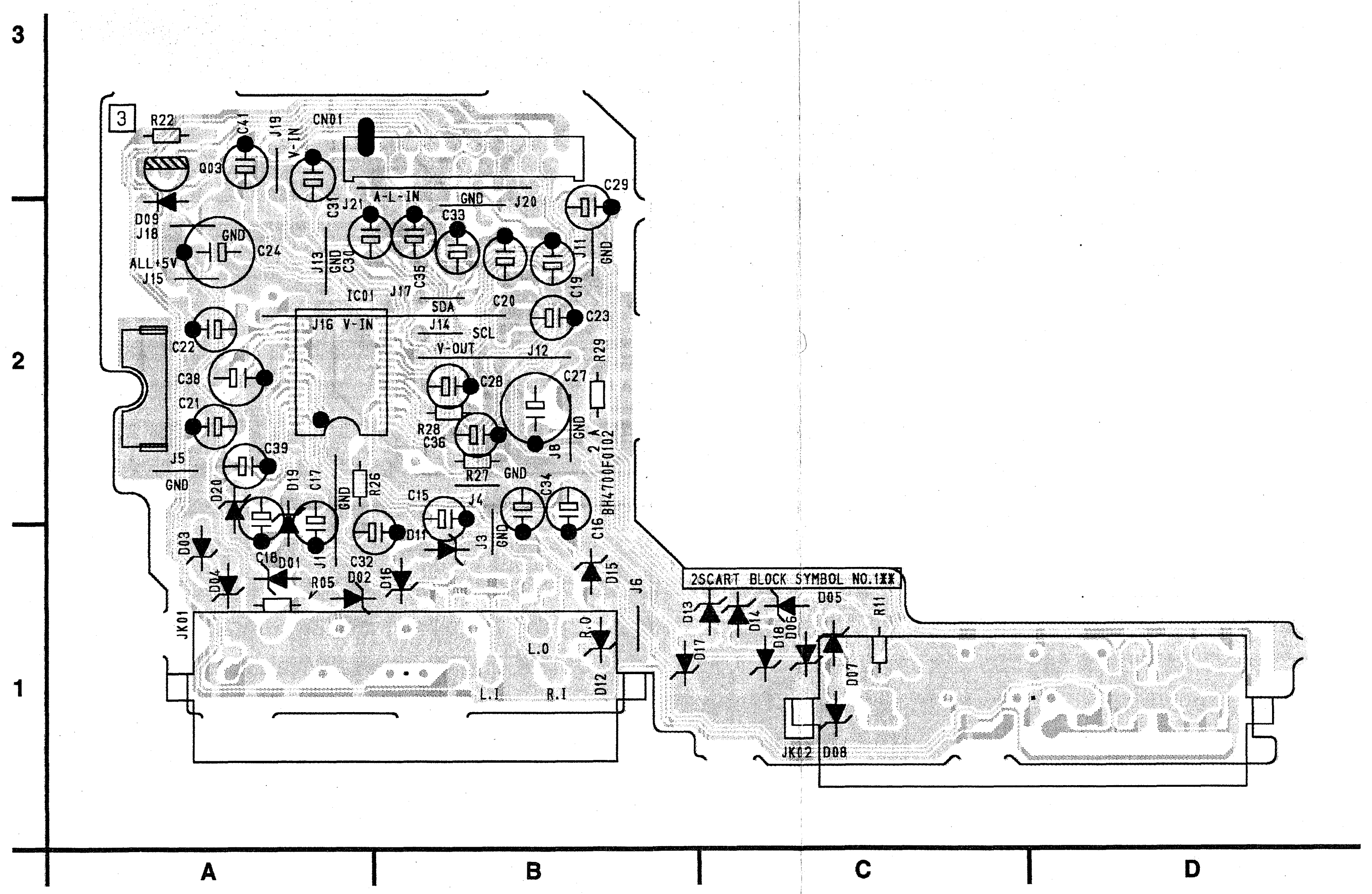

13
V-4
R281
R282
R283
R284
R285
BN6002F0101
SW281
CL281
GND
COM
2
1
A

Mode SW CBA Bottom View


R281
R282
R283
R284
R285
SW281
CL281
COM
GND
2
1
A

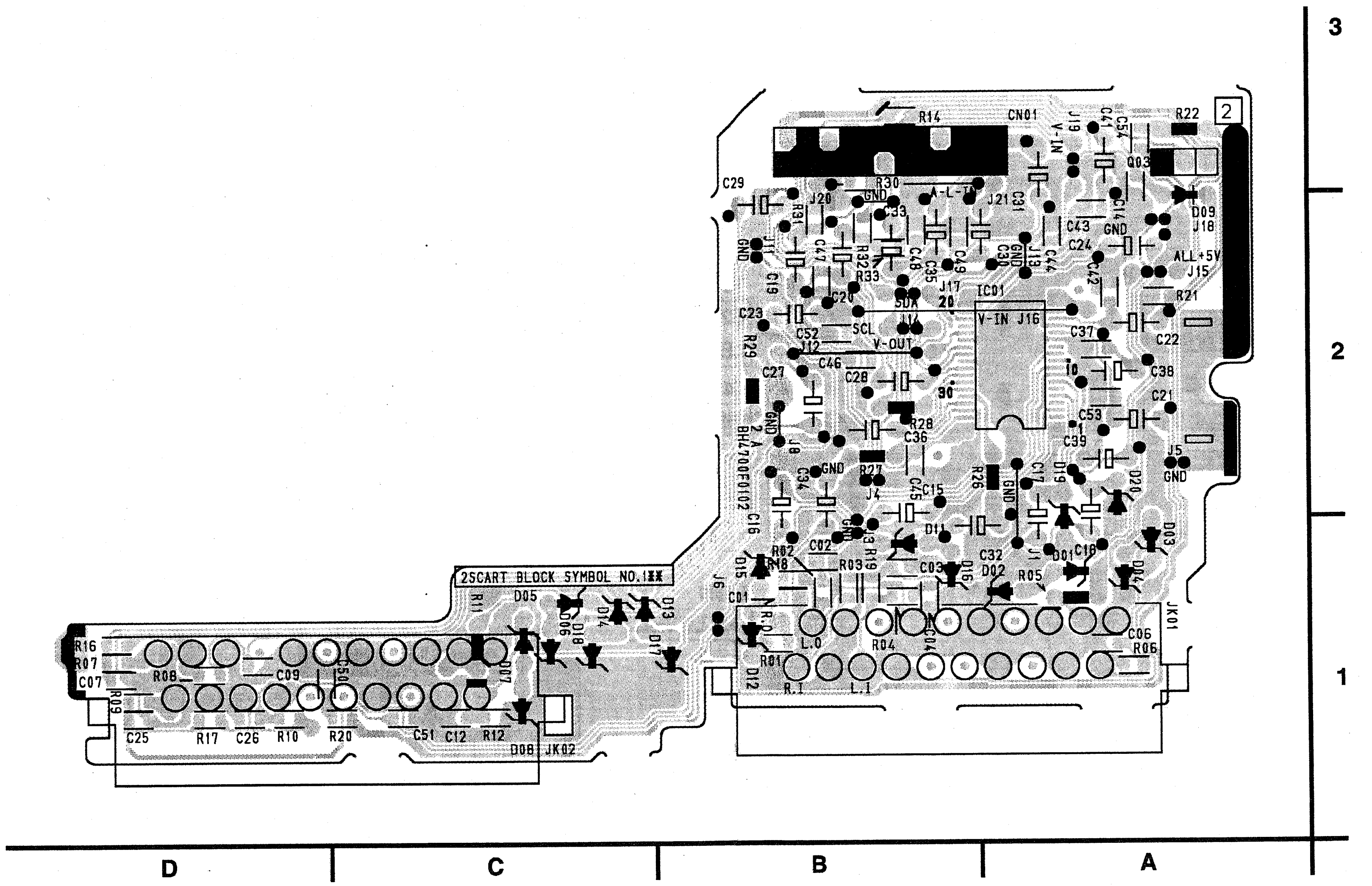
BN6002F01011

Jack CBA Top View


3
2
1
A
B
C
D
R22
C41
J19
V-IN
CND1
Q03
C29
D09
J18
GND
ALL+5V
J15
C24
C31
J21
A-L-IN
GND
J20
C33
J13
GND
C30
C35
J11
GND
IC01
J17
SDA
C20
C19
C23
J16 V-IN
J14
SCL
C22
V-OUT
J12
R29
C38
C28
C27
C21
R28
C36
GND
J8
2 A
BH4700F0102
J5
C39
R27
GND
GND
D20
D19
C17
GND
R26
C15
J4
C34
C16
D03
C18
D01
J1
C32
D11
J3
GND
D15
D04
R05
D02
D16
J6
JK01
L.O
R.O
D12
L.I
R.I
2SCART BLOCK SYMBOL NO.1
D13
D14
D06
D05
R11
D17
D18
D07
JK02
D08

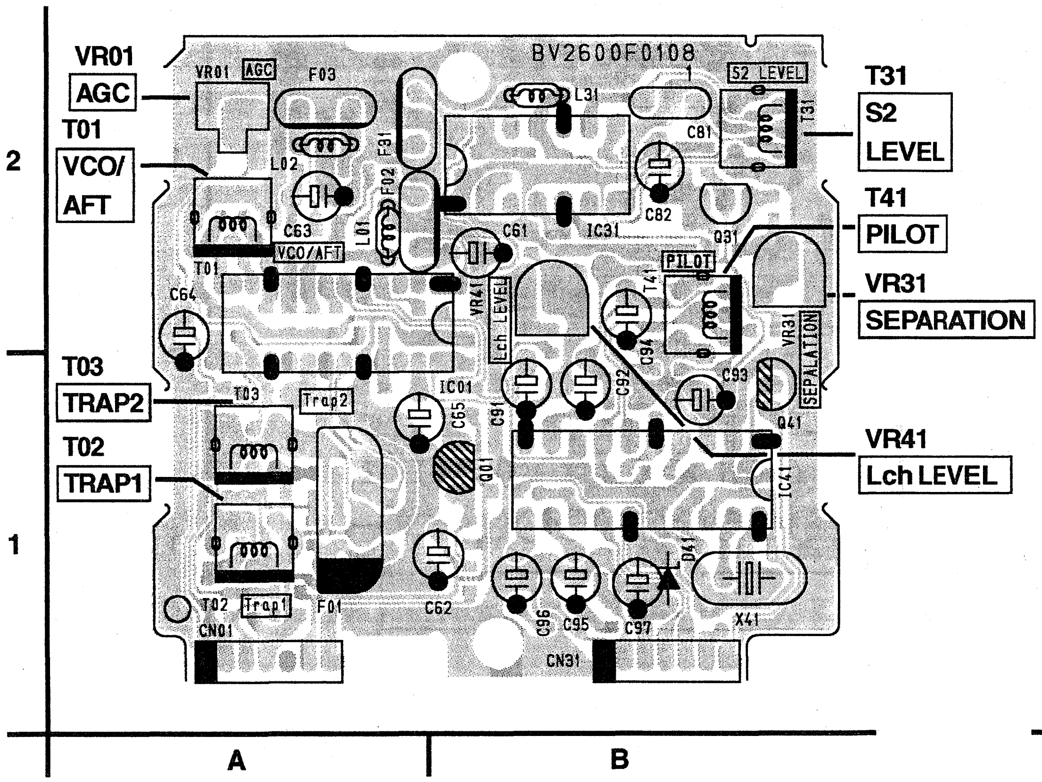
BH4700F01022

Jack CBA Bottom View

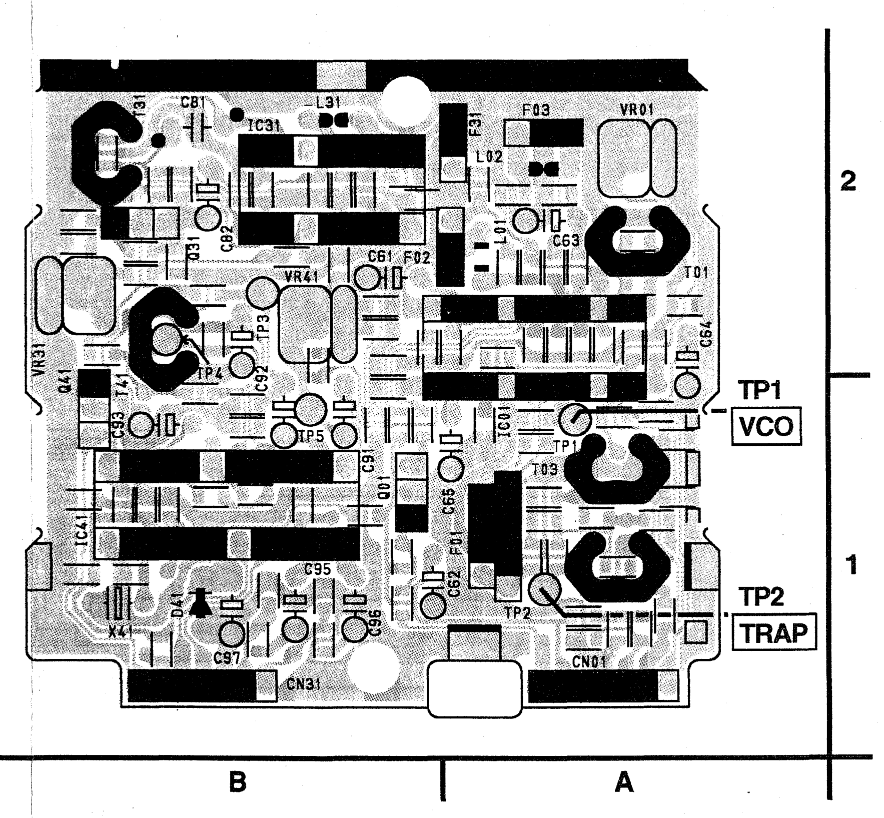

3
2
1
D
C
B
A
2
R14
CN01
J19
V-IN
C41
C51
R22
Q03
C29
R30
GND
A-L-IN
J21
C31
J20
R31
C33
C43
GND
C14
D09
J18
C47
R32
C48
C35
C49
C30
GND
J13
C44
C24
C42
ALL+5V
J15
R33
C19
C20
SDA
J17
20
IC01
R21
C23
C52
SCL
J14
V-IN
J16
C37
C22
R29
J12
V-OUT
C46
C27
C28
90
10
C38
C21
GND
2 A
BH4700F0102
R28
C36
C53
C39
J8
J5
GND
R27
R26
GND
C34
GND
J4
C45
C15
C17
D19
D20
C16
D11
GND
D03
D15
R02
C02
J3
R03
R19
C32
J1
D01
C18
R18
C03
D16
D02
R05
D04
2SCART BLOCK SYMBOL NO.1
J6
C01
R11
D05
D06
D18
D14
D13
D17
R10
L.O
R04
C04
C06
R06
JK01
R16
R07
C07
R08
C09
C50
D07
R01
D12
R.I
L.I
R09
C25
R17
C26
R10
R20
C51
C12
R12
D08
JK02

BH4700F01022

IF CBA Top View


VR01
AGC
T01
VCO/
AFT
T03
TRAP2
T02
TRAP1
T31
S2
LEVEL
T41
PILOT
VR31
SEPARATION
VR41
Lch LEVEL
BV2600F0108
VR01
AGC
F03
L31
S2 LEVEL
T31
C81
L02
F31
F02
C82
C63
VCO/AFT
L01
C61
IC31
Q31
T01
VR41
Lch LEVEL
PILOT
T41
C64
C94
VR31
SEPALATION
T03
Trap2
IC01
C65
C91
C92
C93
Q41
Q01
IC41
D41
T02
Trap1
F01
C62
C96
C95
C97
X41
CN01
CN31
2
1
A
B

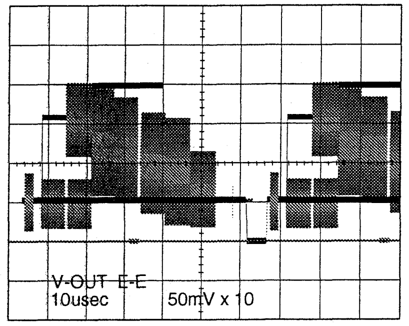
IF CBA Bottom View


TP1
VCO
TP2
TRAP
T31
C81
L31
IC31
F31
F03
VR01
L02
L01
C63
Q31
C82
VR41
C61
F02
T01
VR31
Q41
T41
TP4
TP3
C92
C64
C93
TP5
C91
IC01
TP1
T03
IC41
Q01
C65
F01
C95
C62
D41
X41
C97
C96
TP2
CN31
CN01
2
1
B
A

BV2600F01081

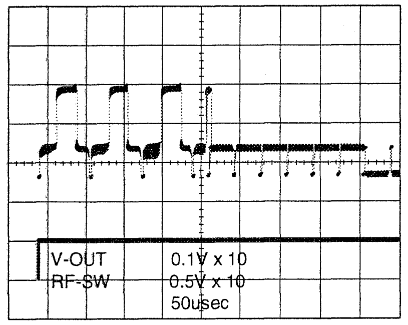
WAVEFORMS

WF1 (TP751 of Main CBA)



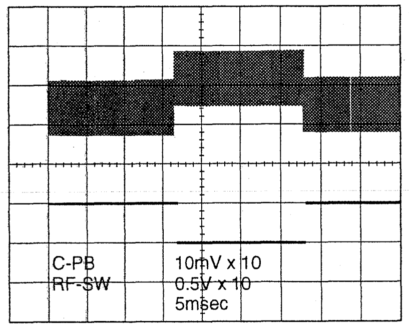
WF1 UPPER (TP751 of Main CBA)

WF2 LOWER (TP302 of Main CBA)

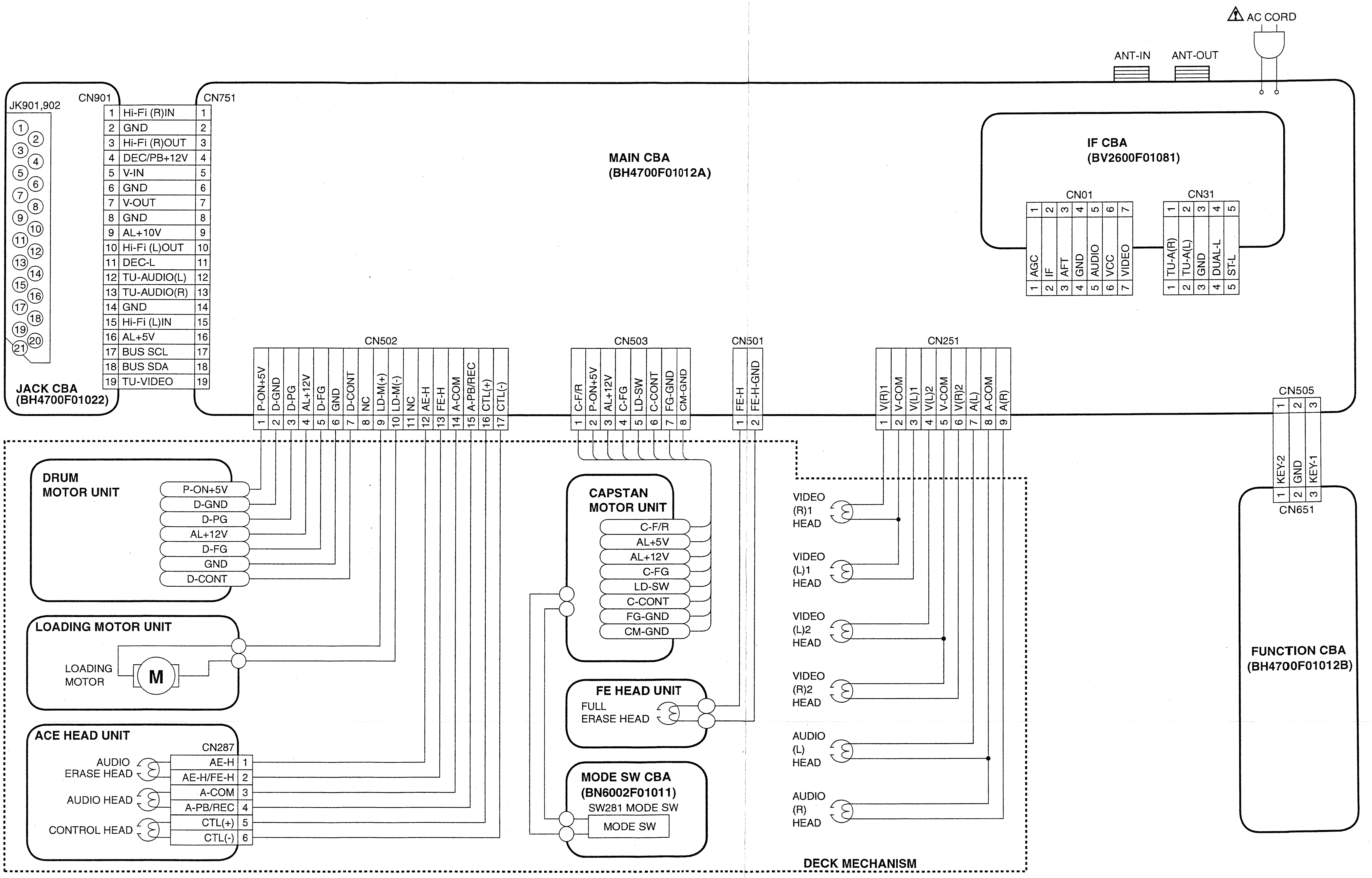


WF5 UPPER (TP301 of Main CBA)

WF2 LOWER (TP302 of Main CBA)



WIRING DIAGRAM


AC CORD
ANT-IN
ANT-OUT
JK901,902
CN901
CN751
1 Hi-Fi (R)IN 1
2 GND 2
3 Hi-Fi (R)OUT 3
4 DEC/PB+12V 4
5 V-IN 5
6 GND 6
7 V-OUT 7
8 GND 8
9 AL+10V 9
10 Hi-Fi (L)OUT 10
11 DEC-L 11
12 TU-AUDIO(L) 12
13 TU-AUDIO(R) 13
14 GND 14
15 Hi-Fi (L)IN 15
16 AL+5V 16
17 BUS SCL 17
18 BUS SDA 18
19 TU-VIDEO 19
JACK CBA
(BH4700F01022)
MAIN CBA
(BH4700F01012A)
IF CBA
(BV2600F01081)
CN01
1 AGC
2 IF
3 AFT
4 GND
5 AUDIO
6 VCC
7 VIDEO
CN31
1 TU-A(R)
2 TU-A(L)
3 GND
4 DUAL-L
5 ST-L
CN502
1 P-ON+5V
2 D-GND
3 D-PG
4 AL+12V
5 D-FG
6 GND
7 D-CONT
8 NC
9 LD-M(+)
10 LD-M(-)
11 NC
12 AE-H
13 FE-H
14 A-COM
15 A-PB/REC
16 CTL(+)
17 CTL(-)
CN503
1 C-F/R
2 P-ON+5V
3 AL+12V
4 C-FG
5 LD-SW
6 C-CONT
7 FG-GND
8 CM-GND
CN501
1 FE-H
2 FE-H-GND
CN251
1 V(R)1
2 V-COM
3 V(L)1
4 V(L)2
5 V-COM
6 V(R)2
7 A(L)
8 A-COM
9 A(R)
CN505
CN651
1 KEY-2
2 GND
3 KEY-1
DRUM
MOTOR UNIT
P-ON+5V
D-GND
D-PG
AL+12V
D-FG
GND
D-CONT
LOADING MOTOR UNIT
LOADING
MOTOR
M
ACE HEAD UNIT
CN287
AUDIO
ERASE HEAD
AUDIO HEAD
CONTROL HEAD
AE-H 1
AE-H/FE-H 2
A-COM 3
A-PB/REC 4
CTL(+) 5
CTL(-) 6
CAPSTAN
MOTOR UNIT
C-F/R
AL+5V
AL+12V
C-FG
LD-SW
C-CONT
FG-GND
CM-GND
FE HEAD UNIT
FULL
ERASE HEAD
MODE SW CBA
(BN6002F01011)
SW281 MODE SW
MODE SW
VIDEO
(R)1
HEAD
VIDEO
(L)1
HEAD
VIDEO
(L)2
HEAD
VIDEO
(R)2
HEAD
AUDIO
(L)
HEAD
AUDIO
(R)
HEAD
DECK MECHANISM
FUNCTION CBA
(BH4700F01012B)

SYSTEM CONTROL TIMING CHARTS

Mode SW : LD-SW

LD-SW Position detection A/D Input voltage Limit (Calculated voltage)	Symbol
3.76V~4.50V (4.12V)	EJ
4.51V~5.00V (5.00V)	CL
0.00V~0.25V (0.00V)	SB
1.06V~1.50V (1.21V)	TL
0.66V~1.05V (0.91V)	FB
1.99V~2.60V (2.17V)	SF
1.51V~1.98V (1.80V)	AU
3.20V~3.75V (3.40V)	AL
0.26V~0.65V (0.44V)	SS
4.51V~5.00V (5.00V)	GC
2.61V~3.19V (2.97V)	RS

Note:

EJ → RS : Loading FWD (LM-FWD "H", LM-REV "L")

RS → EJ : Loading REV (LM-FWD "L", LM-REV "H")

Stop (A) = Loading

Stop (B) = Unloading

Note :

Symbol	Loading Status
EJ	Eject
CL	Eject ~ REW Reel
SB	REW Reel ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ Still / Slow
SS	Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ RS (REW Search)
RS	RS (REW Search)

Still/Slow Control
Frame Advance Timing Chart

1) SP Mode

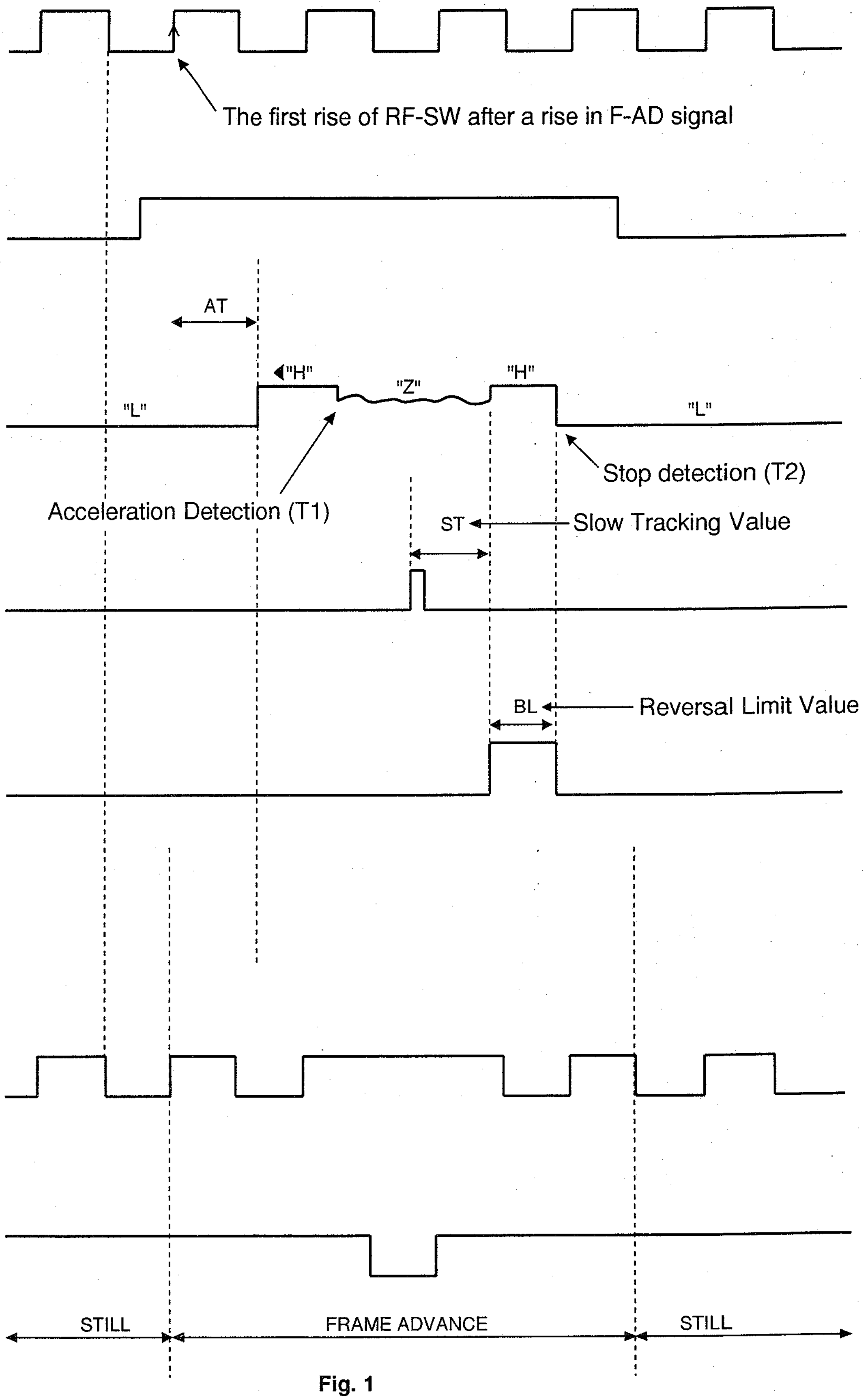

13 RF-SW
The first rise of RF-SW after a rise in F-AD signal
F-AD
(Internal Signal)
AT
5 C-DRIVE
"L"
"H"
"Z"
"H"
"L"
Acceleration Detection (T1)
Stop detection (T2)
ST
Slow Tracking Value
37 PB CTL
BL
Reversal Limit Value
10 C-F/R
11 H-A-SW
12 ROTA
STILL
FRAME ADVANCE
STILL

Fig. 1

2) LP Mode

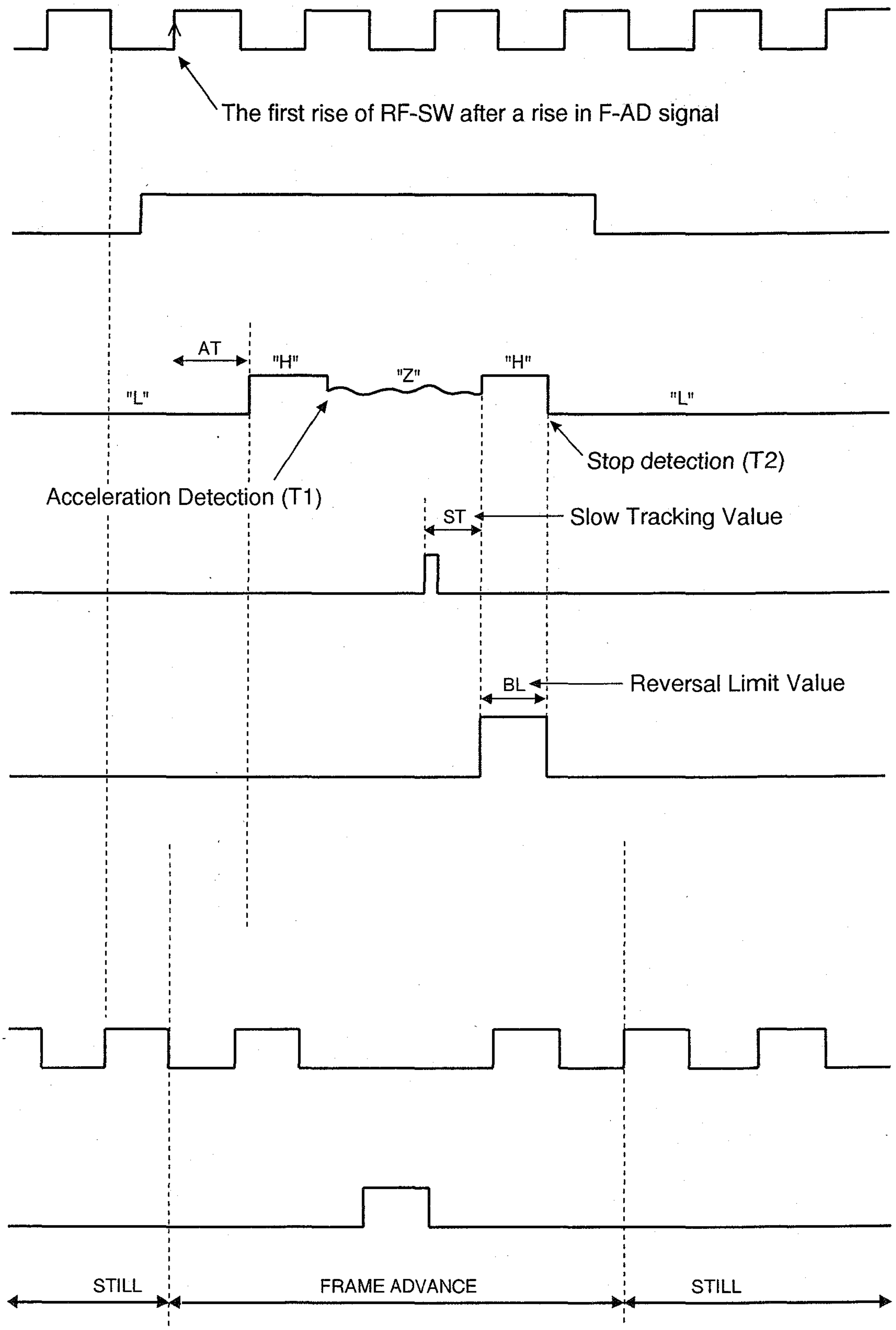

13 RF-SW
The first rise of RF-SW after a rise in F-AD signal
F-AD
(Internal Signal)
AT
"H"
"Z"
"H"
5 C-DRIVE
"L"
"L"
Stop detection (T2)
Acceleration Detection (T1)
ST
Slow Tracking Value
37 PB CTL
BL
Reversal Limit Value
10 C-F/R
11 H-A-SW
12 ROTA
STILL
FRAME ADVANCE
STILL

Fig. 2

1. EJECT (PWER-OFF) → CASSETTE IN (POWER-ON) → STOP(B) → STOP(A) → PLAY → RS → FS → PLAY → STILL (SLOW) → PLAY → STOP(A)

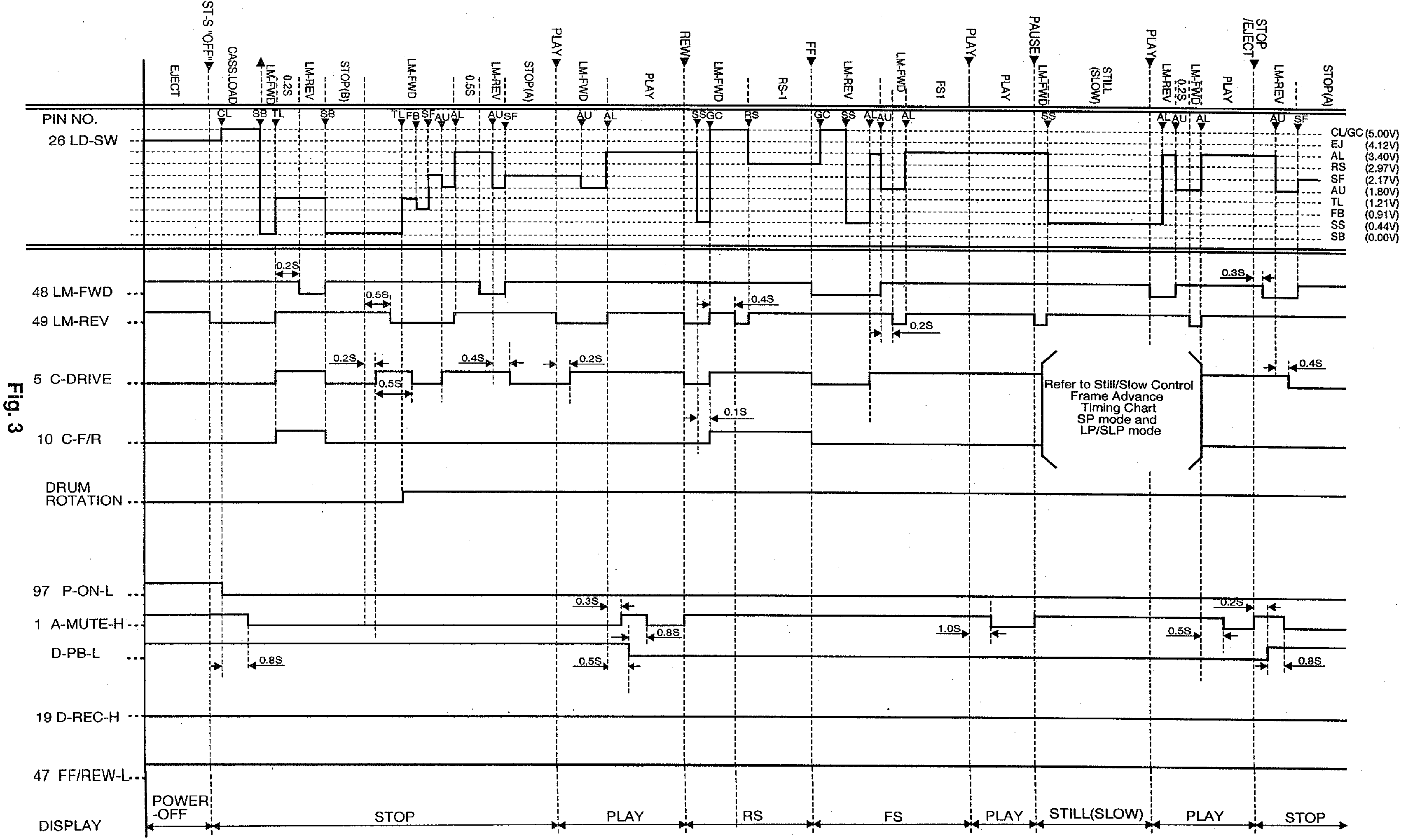
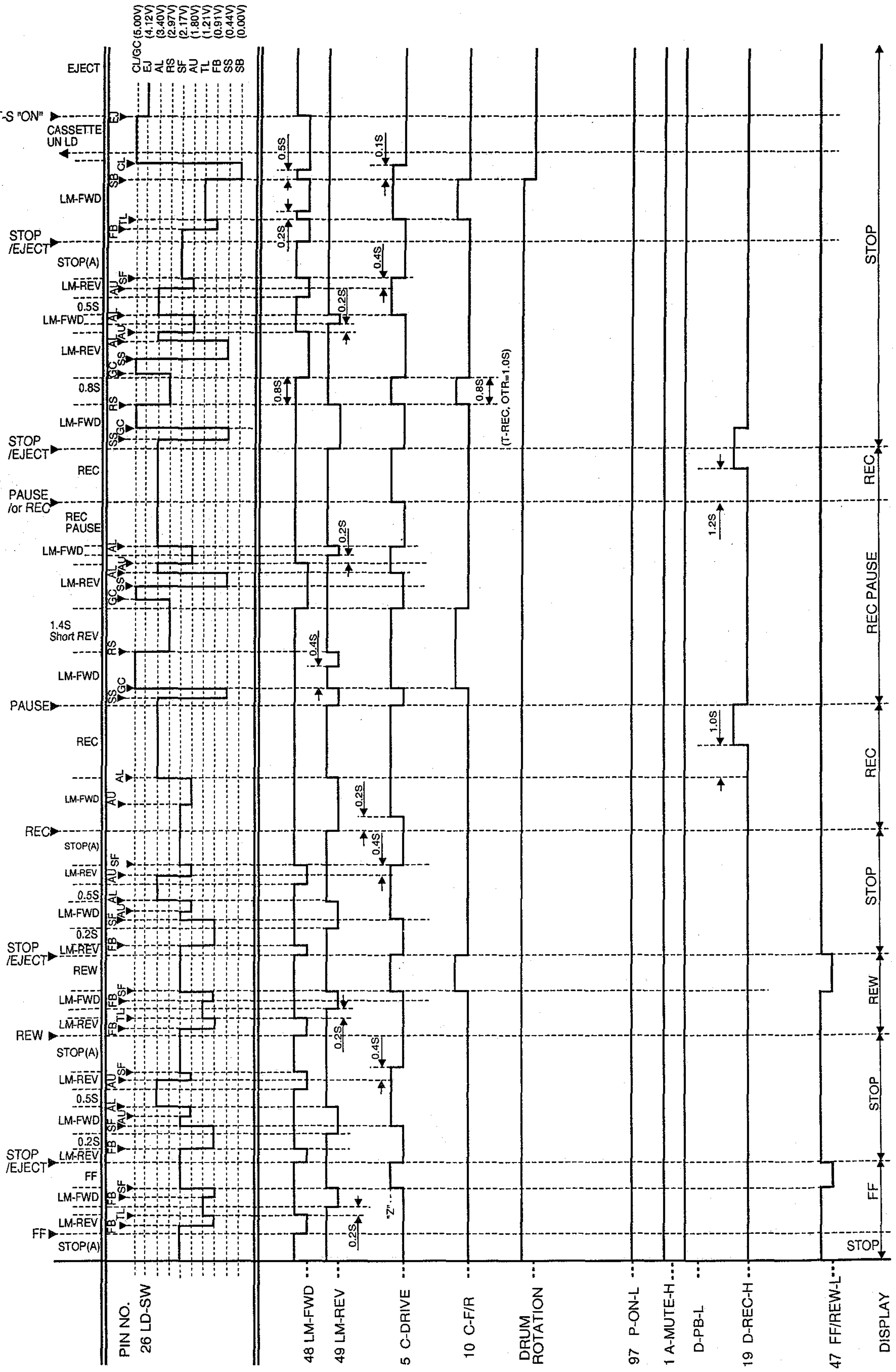

EJECT
ST-S "OFF"
CASS.LOAD
LM-FWD
0.2S
LM-REV
STOP(B)
LM-FWD
0.5S
LM-REV
STOP(A)
PLAY
LM-FWD
PLAY
REW
LM-FWD
RS-1
FF
LM-REV
LM-FWD
FS1
PLAY
PLAY
PAUSE
LM-FWD
STILL (SLOW)
PLAY
LM-REV
0.2S
LM-FWD
PLAY
STOP /EJECT
LM-REV
STOP(A)
PIN NO.
26 LD-SW
CL
SB
TL
SB
TL
FB
SF
AU
AL
AU
SF
AU
AL
SS
GC
RS
GC
SS
AL
AU
AL
SS
AL
AU
AL
AU
SF
CL/GC (5.00V)
EJ (4.12V)
AL (3.40V)
RS (2.97V)
SF (2.17V)
AU (1.80V)
TL (1.21V)
FB (0.91V)
SS (0.44V)
SB (0.00V)
48 LM-FWD
49 LM-REV
5 C-DRIVE
10 C-F/R
DRUM ROTATION
97 P-ON-L
1 A-MUTE-H
D-PB-L
19 D-REC-H
47 FF/REW-L
DISPLAY
0.2S
0.5S
0.2S
0.5S
0.4S
0.2S
0.4S
0.1S
0.2S
0.3S
0.4S
Refer to Still/Slow Control Frame Advance Timing Chart SP mode and LP/SLP mode
0.3S
0.8S
0.5S
0.8S
1.0S
0.2S
0.5S
0.8S
POWER -OFF
STOP
PLAY
RS
FS
PLAY
STILL(SLOW)
PLAY
STOP

Fig. 3

2. STOP(A) → FF → STOP(A) → REW → STOP(A) → REC → PAUSE → PAUSE or REC → STOP(A) → EJECT



EJECT
ST-S "ON"
CASSETTE UN LD
LM-FWD
STOP /EJECT
STOP(A)
LM-REV
0.5S
LM-FWD
LM-REV
0.8S
LM-FWD
STOP /EJECT
REC
PAUSE /or REC
REC PAUSE
LM-FWD
LM-REV
1.4S Short REV
LM-FWD
PAUSE
REC
LM-FWD
REC
STOP(A)
LM-REV
0.5S
LM-FWD
0.2S
STOP /EJECT
LM-REV
REW
LM-FWD
LM-REV
REW
STOP(A)
LM-REV
0.5S
LM-FWD
0.2S
STOP /EJECT
LM-REV
FF
LM-FWD
LM-REV
FF
STOP(A)
CL/GC (5.00V)
EJ (4.12V)
AL (3.40V)
RS (2.97V)
SF (2.17V)
AU (1.80V)
TL (1.21V)
FB (0.91V)
SS (0.44V)
SB (0.00V)
EJ
CL
SB
TL
FB
SF
AU
AL
SS
GC
RS
0.5S
0.1S
0.2S
0.4S
0.8S
(T-REC, OTR=1.0S)
1.2S
1.0S
"Z"
PIN NO.
26 LD-SW
48 LM-FWD
49 LM-REV
5 C-DRIVE
10 C-F/R
DRUM ROTATION
97 P-ON-L
1 A-MUTE-H
D-PB-L
19 D-REC-H
47 FF/REW-L
DISPLAY
STOP
REC
REC PAUSE
REC
STOP
REW
STOP
FF
STOP

Fig. 4

IC PIN FUNCTION

IC501 (SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 1.0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	OUT	A-MUTE-H	Audio Mute Control Signal	H
2	OUT	REC-CTL(+)	Record Control Signal (+)	H/L
3	OUT	REC-CTL(-)	Record Control Signal (-)	H/L
4	-	N.U.	Not Used	-
5	OUT	C-DRIVE	Capstan Motor Drive Signal	H/Z
6	-	N.U.	Not Used	-
7	-	N.U.	Not Used	-
8	IN/ OUT	BUS SDA-2	I2C BUS Control Data	H/L
9	OUT	BUS SCL-2	I2C BUS Control Data	H/L
10	OUT	C-F/R	Capstan Motor FWD/REV Control Signal (FWD="L" / REV="H")	H/L
11	OUT	H-A-SW	Video Head amp Switching Pulse	H/L
12	OUT	ROTA	Color Phase Rotary Changeover Signal	H/L
13	OUT	RF-SW	Video Head Switching Pulse	H/L
14	IN	ST-L	Stereo Broadcasting	L
15	OUT	HiFi-SW	HiFi Audio Head Switching Pulse	H/L
16	IN	DUAL-L	DUAL Broadcasting	L
17	OUT	D-VSYNC	Dummy Vertical Synchronized Pulse	H/Hi-Z
18	IN	A-MODE	HiFi Tape Detection Signal	L
19	OUT	D-REC-H	Delayed Record Signal (Recording="H")	H
20	-	N.U.	Not Used (5V)	-
21	IN	REC-SW	Record Safety Switching Signal	L
22	IN	AFC	Automatic Frequency Control Signal	A/D
23	IN	V-ENV	Video Envelope Signal	A/D
24	IN	END-S	Tape END Position Detect Signal	A/D
25	IN	ST-S	Tape Start Position Detect Signal	A/D
26	IN	LD-SW	Deck Mode Position Detect Signal	A/D
27	IN	KEY-2	Key Scan Input Signal 2	A/D
28	-	AVREF	Standard Voltage Input Terminal of A/D Converter (+5V)	-
29	-	AVSS	GND Supply Terminal of A/D Converter (GND)	-
30	-	AVDD	Power Supply Terminal of A/D Converter (Back Up +5V)	-
31	IN	KEY-1	Key Scan Input Signal 2	A/D
32	IN	PG-DELAY/ TEST	Video Head Switching Pulse Signal Adjusted Voltage	A/D
33	-	N.U.	Not Used (GND)	-
34	IN	T-REEL	Take Up Reel Rotation Signal	H/L
35	IN	P-DOWN-L	Power Voltage Down Detector Signal	L
36	IN	C-SYNC	Composite Synchronized Pulse	H/L
37	IN	PB-CTL	Playback Control Signal	H/L
38	IN	D-PG	Drum Motor Pulse Generator	H/L
39	-	MP	GND	-
40	IN	RESET	System Reset Signal (Reset="L")	L
41	-	VSS	VSS (GND)	-
42	-	XTAL	Main Clock 13.300857 MHz (IN)	-
43	-	EXTAL	Main Clock 13.300857 MHz	-
44	IN	D-FG	Drum Motor Frequency Generator	H/L

Pin No.	IN/ OUT	Signal Name	Function	Active Level
45	IN	C-FG	Capstan Motor Rotation Detection Pulse	H/L
46	OUT	S-LED	LED for Sensor ON/OFF	H
47	OUT	FF/REW-L	CTL Amp Gain Switching Signal (FF/REW="L")	L
48	OUT	LM-FWD	Loading Motor Forward Control (Forward/Stop ="H")	H/L
49	OUT	LM-REV	Loading Motor Revrese Control (Revrese/ Stop="H")	H/L
50	OUT	C-CONT	Capstan Motor Control Signal	PWM
51	OUT	D-CONT	Drum Motor Control Signal	PWM
52	-	N.U.	Not Used (GND)	-
53	IN	H-A-COMP	Head Amp Comparator Signal	H/L
54	OUT	G1	Display Digit	H/L
55	OUT	G2	Display Digit	H/L
56	OUT	G3	Display Digit	H/L
57	OUT	G4	Display Digit	H/L
58	OUT	G5	Display Digit	H/L
59	OUT	G6	Display Digit	H/L
60	OUT	G7	Display Digit	H/L
61	OUT	G8	Display Digit	H/L
62	OUT	G9	Display Digit	H/L
63	OUT	G10	Display Digit	H/L
64	OUT	a	Display Segment	H/L
65	OUT	b	Display Segment	H/L
66	OUT	c	Display Segment	H/L
67	OUT	d	Display Segment	H/L
68	OUT	e	Display Segment	H/L
69	OUT	f	Display Segment	H/L
70	OUT	g	Display Segment	H/L
71	OUT	h	Display Segment	H/L
72	OUT	i	Display Segment	H/L
73	OUT	j	Display Segment	H
74	-	N.U.	Not Used	-
75	-	N.U.	Not Used	-
76	-	N.U.	Not Used	-
77	-	N.U.	Not Used	-
78	IN	VFDP	-28V	-
79	-	N.U.	Not Used	-
80	-	N.U.	Not Used (5V)	-
81	OUT	OSD-CLK	On-Screen Display IC Control (Clock)	H/L
82	IN	DAVN-L	PDC Data Receive="L"	L
83	-	N.U.	Not Used	-
84	-	N.U.	Not Used (GND)	-
85	OUT	REMOCON	Remote control Sensor	H/L
86	-	TEX	Sub Clock 32KHz	-
87	-	TX	Sub Clock 32KHz	-
88	-	VSS	VSS (GND)	-
89	-	VDD	VDD (Back Up 5V)	-
90	-	VPP	VPP (Back Up 5V)	-
91	IN/ OUT	BUS SDA	IICBUS Control Data	H/L
92	OUT	BUS SCL	IICBUS Control Clock	H/L
93	-	N.U.	Not Used (GND)	-
94	-	N.U.	Not Used	-
95	-	N.U.	Not Used	-
96	-	N.U.	Not Used	-
97	OUT	P-ON-L	Power On Signal at Low	L
98	OUT	DEC/PB-L	Control Output Signal to AV1 (Scart Jack)	L
99	OUT	V-MUTE-H	Video Mute Signal	H
100	OUT	STILL/ SLOW-L	Still/Slow Circuit Change Over "L" Signal (STILL/SLOW Mode ="L," Other ="Hi-Z")	L

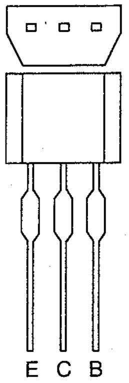
Notes:

Abbreviation for Active Level:

PWM -- Pulse Wide Modulation

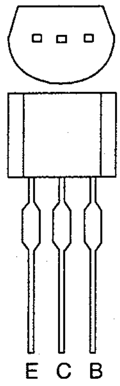
A/D -- Analog - Digital Converter

LEAD IDENTIFICATIONS



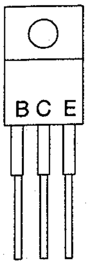
KTA1266(Y.GR)
KTC3193(Y)
KTA1267(Y.GR)
2SA1175(J.H.F)
2SA608(E.F)
KTC3199(Y, GR)
2SC2785(J.H.F.K)
2SA1346
2SA933AS(Q,R,S)
2SC1740(Q,R)
2SC2058(Q.P)
DTA124ES

KRA103M
KRC103M
2SC3576
2SA1654
2SC4133
KSR1214
KRC106M-AT
DTC124ES

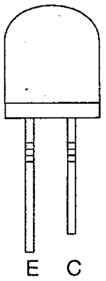


2SA1015-GR (TPE2)
2SC1815-GR (TPE2)
2SC1815-Y (TPE2)
2SD734F-NP-AQ
2SD734G-NP-AQ
2SC1815-BL (TPE2)

2SC4517



ST-319R2-B



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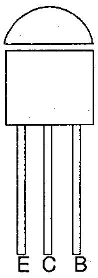
2SC3331(T.U)



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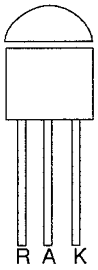
KIA431



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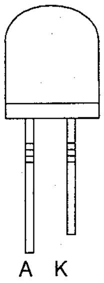
SIR-56ST3F-N



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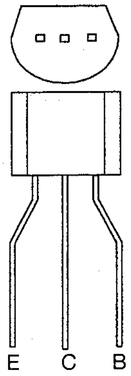

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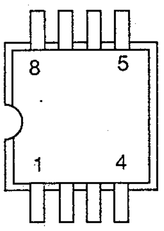
M24C02-MN6



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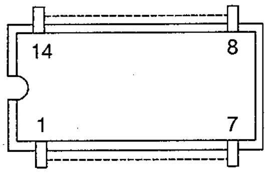
NJM324D
LM324N



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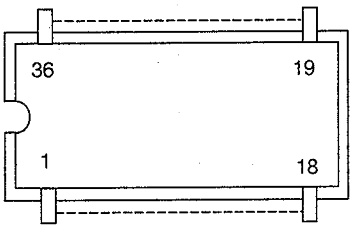

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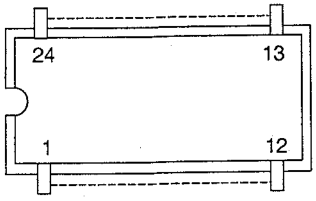

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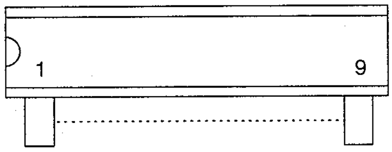

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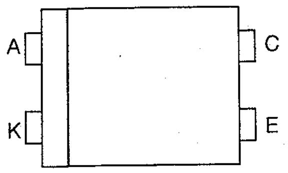
PS2561-1 (M.D.H.W)



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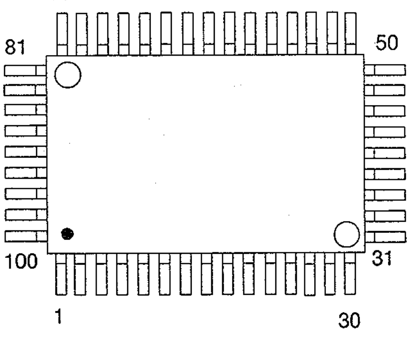
QSMQC0RSN090
QSMQD0RSN090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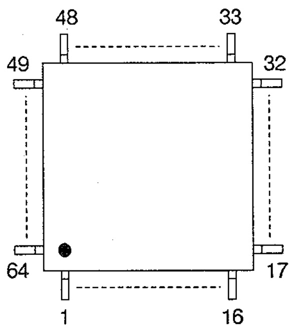
51
81
50
100
31
1
30

LA72638M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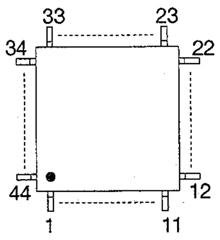
49
32
64
17
1
16

TDA9874H/V1


33
23
34
22
44
12
1
11

Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference

DECK MECHANISM SECTION

4-head Hi-Fi
VIDEO CASSETTE RECORDER

SVC613

Sec. 2: Deck Mechanism Section
- ● Standard Maintenance
- ● Alignment for Mechanism
- ● Disassembly/Assembly of Mechanism
- ● Front Loading Assembly
- ● Alignment Procedures of Mechanism

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STANDARD MAINTENANCE

Service Schedule of Components

H: Hours ○: Check ●: Change

Deck		Periodic Service Schedule			
Ref. No.	Part Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B8	Pulley Assembly		●		●
B21	Loading Belt		●		●
B27	Tension Lever Assembly		●		●
B31	AC Head Assembly			●	
B32, B339	Reel (T), Reel (S)			●	
B37	Capstan Motor		●		●
B52	Capstan Belt		●		●
*B73	FE Head CBA			●	
B132	Clutch Assembly		●		●
B133	Idler Assembly		●		●
B410	Pinch Roller Assembly		●		●
B413	Main Brake T Sub Assembly		●		●
B414	Main Brake S Assembly		●		●

Notes:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / Audio Control Head / Full Erase Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

   * B73 ------ VCR Model only

Cleaning

Cleaning of Video Head

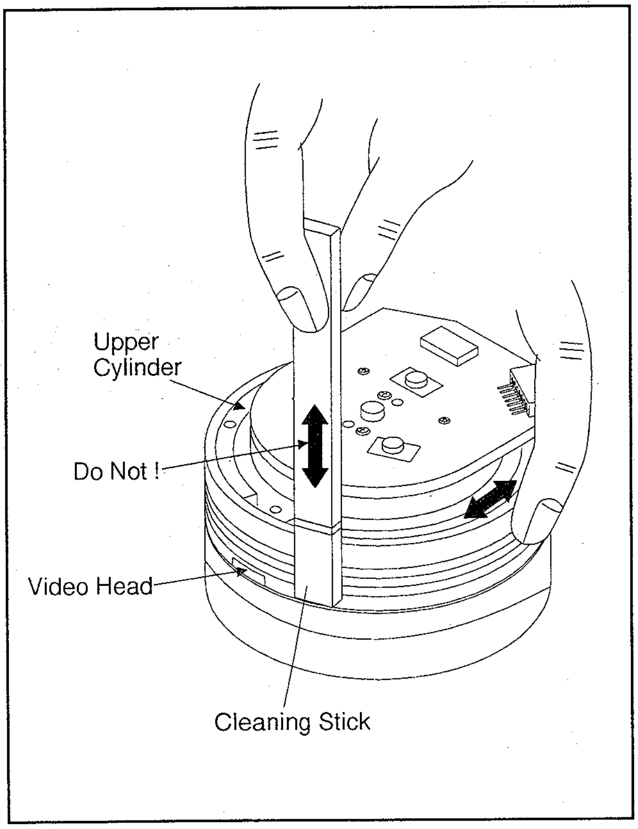
Clean the head with a head cleaning stick or chamois cloth.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois cloth and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois cloth.



Cleaning of Audio Control Head

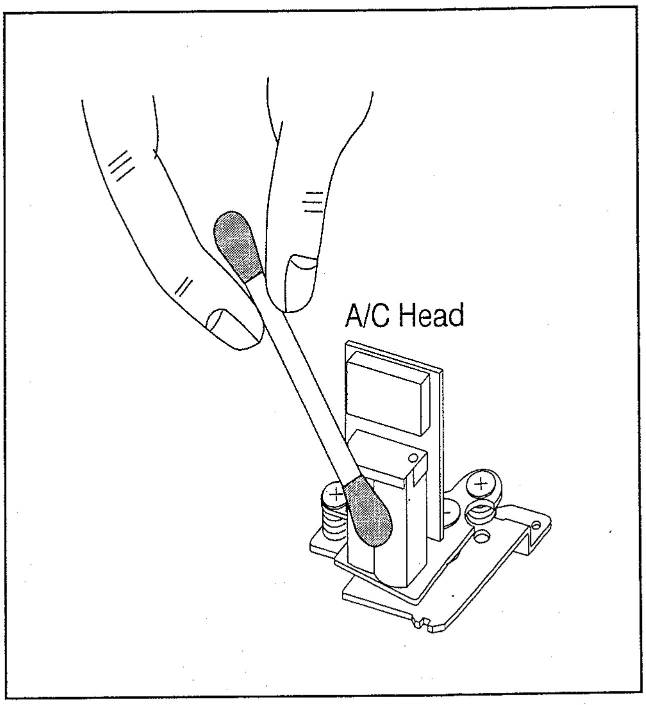
Clean the head with a cotton swab.

Procedure

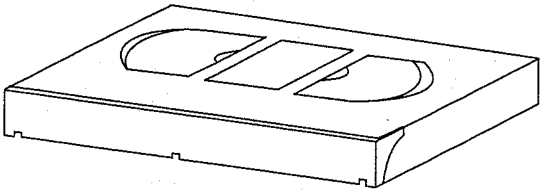
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

Notes:

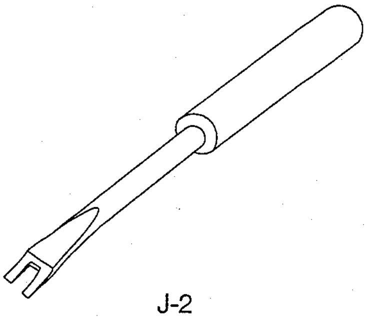
1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



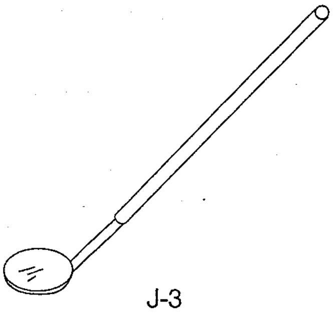
SERVICE FIXTURE AND TOOLS



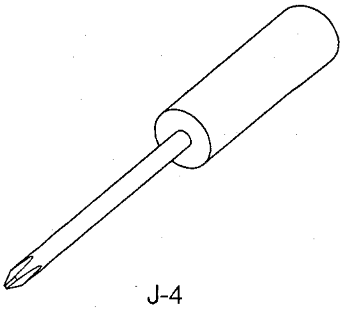
J-1-1, J-1-2



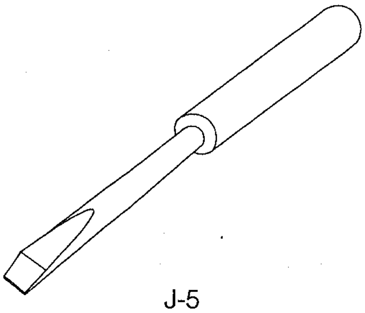
J-2



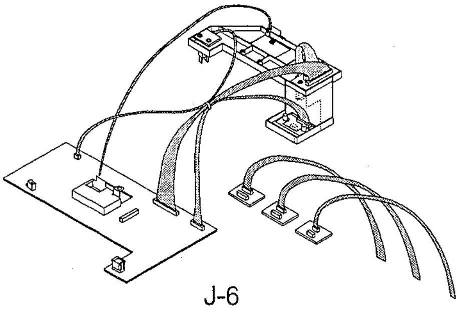
J-3



J-4



J-5



J-6

Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	FL6A	Head Adjustment of Audio Control Head
J-1-2	Alignment Tape	FL6N8 (1speed only) FL6NS8 (2speed only)	Azimuth and X Value Adjustment of Audio Control Head / Adjustment of Envelope Waveform
J-2	Guide Roller Adj.Screwdriver	FSJ-0006	Guide Roller
J-3	Mirror	FSJ-0004	Tape Transportation Check
J-4	Azimuth Adj.Screwdriver +	Available Locally	A/C Head Height
J-5	X Value Adj.Screwdriver -	Available Locally	X Value
J-6	U19 Deck Extension Cable	N1200XA	All Mechanical and Electrical Adjustments

Note:
Before starting any adjustment, take the Deck Assembly out of the cabinet and use J-6 to connect the Deck Assembly with the Main CBA.

MECHANICAL ALIGNMENT PROCEDURES

Explanation of alignment for the tape to correctly run starts on the next page. Refer to the information below on this page if a tape gets stuck, for example, in the mechanism due to some electrical trouble of the unit.

Service Information

A. Method for Manual Tape Loading/Unloading

To load a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Insert a cassette tape. Though the tape will not be automatically loaded, make sure that the cassette tape is all the way in at the inlet of the Cassette Holder. To confirm this, lightly push the cassette tape further in and see if the tape comes back out, by a spring motion, just as much as you have pushed in.
4. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 until the cassette tape is fully loaded. By turning the Pulley Assembly, you are turning the cam indicated in this figure. However, movement of the cam will be very slow. Allow a minute or two to complete this task.

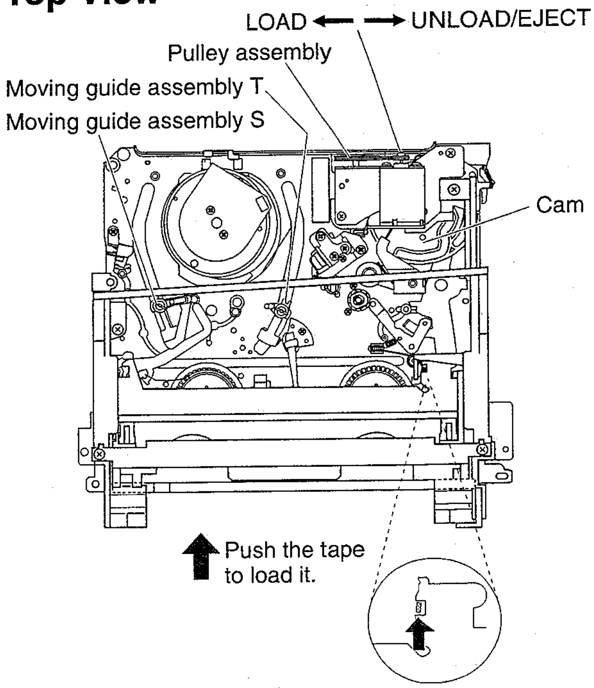
To unload a cassette tape manually:

1. Disconnect the AC plug.
2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1 to unload the cassette tape. When turning the Pulley Assembly, please be aware that this is a long process and the cassette will not start getting unloaded instantaneously. Within this long process, before the cassette actually starts getting unloaded, there is a time period during which the moving guide assemblies slide back to their original positions shown in Fig. M1. However, the tape will be left wound around the cylinder. To put the tape back into the cassette, gently turn the Capstan Motor in the direction shown in Fig. M2. Make sure that the tape is completely placed back in the cassette before the cassette starts getting unloaded. Otherwise the tape hanging out will be caught and damaged by the lid of the cassette when it closes.
   By turning the Pulley Assembly, you are turning the cam indicated in Fig. M1. As stated, movement of the cam will be very slow. Allow a minute or two to complete this task.

B. Method to place the Cassette Holder in the tape-loaded position without a cassette tape

1. Disconnect the AC Plug.
2. Remove the Top Cover.
3. Turn the Pulley Assembly in the appropriate direction shown in Fig. M1. Release the locking tabs shown in Fig. M1 and continue turning the Pulley Assembly until the Cassette Holder comes to the tape-loaded position. Allow a minute or two to complete this task.

Top View



Push the tabs gently to unlock when loading without a cassette.

Fig. M1

Bottom View

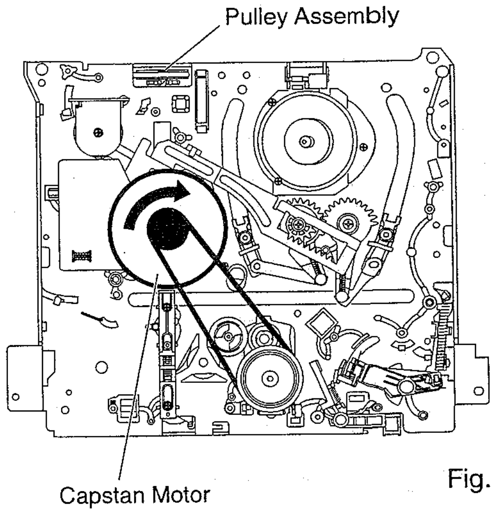


Fig. M2

1. Tape Interchangeability Alignment

Notes:

1. To do these alignment procedures, make sure that the Tracking Control Circuit is set to the center position every time a tape is loaded or unloaded. (Refer to page 2-3-4, procedure 1-C, step 2.)

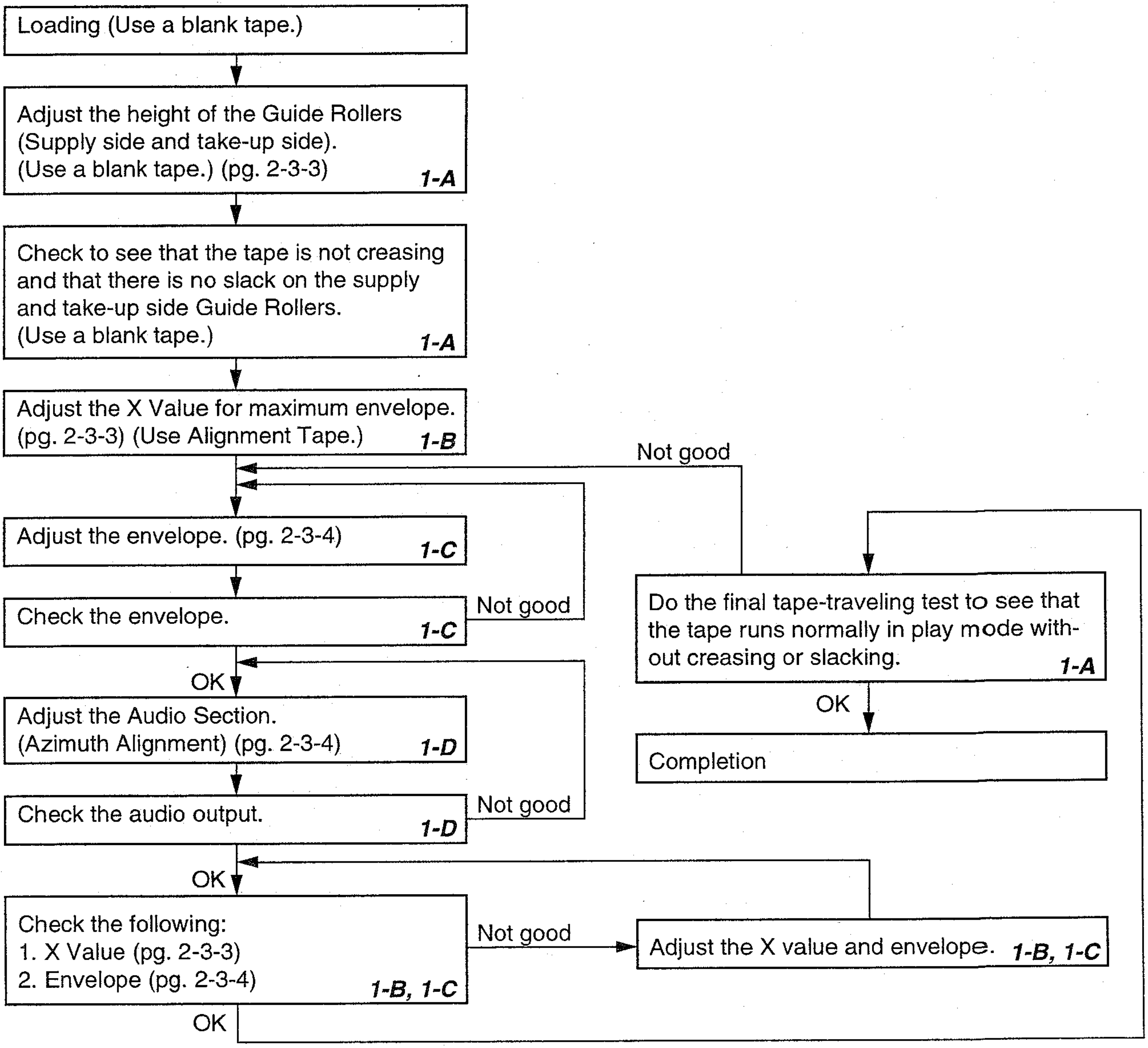
2. Remove the Guide Holder R before begining alignment procedures.
(Refer to page 2-4-9. Fig: DM22).

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (FL6N8)
Guide Roller Adj. Screwdriver
X-Value Adj. Screwdriver

Note: Before starting this Mechanical Alignment, do all Electrical Adjustment procedures.

Flowchart of Alignment for tape traveling


Loading (Use a blank tape.)
Adjust the height of the Guide Rollers (Supply side and take-up side). (Use a blank tape.) (pg. 2-3-3) 1-A
Check to see that the tape is not creasing and that there is no slack on the supply and take-up side Guide Rollers. (Use a blank tape.) 1-A
Adjust the X Value for maximum envelope. (pg. 2-3-3) (Use Alignment Tape.) 1-B
Not good
Adjust the envelope. (pg. 2-3-4) 1-C
Check the envelope. 1-C
Not good
OK
Adjust the Audio Section. (Azimuth Alignment) (pg. 2-3-4) 1-D
Check the audio output. 1-D
Not good
OK
Check the following: 1. X Value (pg. 2-3-3) 2. Envelope (pg. 2-3-4) 1-B, 1-C
Not good
Adjust the X value and envelope. 1-B, 1-C
OK
Do the final tape-traveling test to see that the tape runs normally in play mode without creasing or slacking. 1-A
OK
Completion

1-A. Preliminary/Final Checking and Alignment of Tape Path

Purpose:

To make sure that the tape path is well stabilized.

Symptom of Misalignment:

If the tape path is unstable, the tape will be damaged.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

1. Play back a blank cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4.)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Guide Roller Adj. Screwdriver. (Refer to Fig. M3 and M5.)
   Note: Beneath each Guide Roller, there is a small screw. (Refer to Fig. M5.) This screw works to apply adequate torque to the shaft of each Guide Roller so that the Guide Roller turns properly. Even when adjusting the height of the Guide Roller(s), do not touch these two small screws.
3. Check to see that the tape runs without creasing at Take-up Guide Post [4] or without snaking between Guide Roller [3] and ACE Head.
   (Fig. M3 and M5)
4. If creasing or snaking is apparent, adjust the Tilt Adj. Screw of the ACE Head. (Fig. M6)

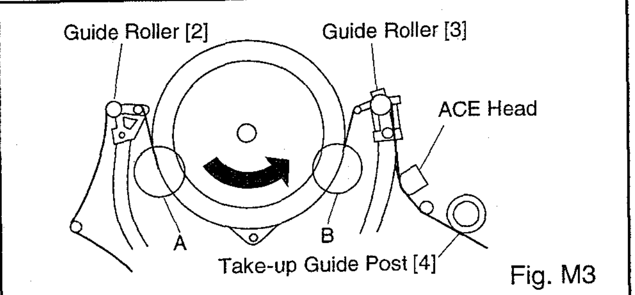


Fig. M3

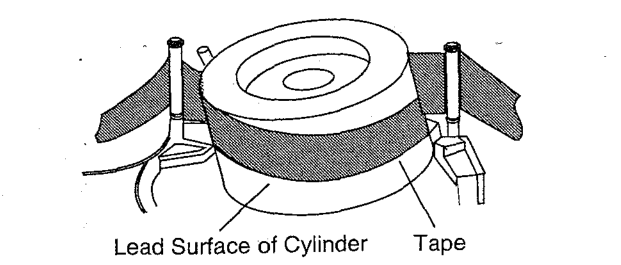


Fig. M4

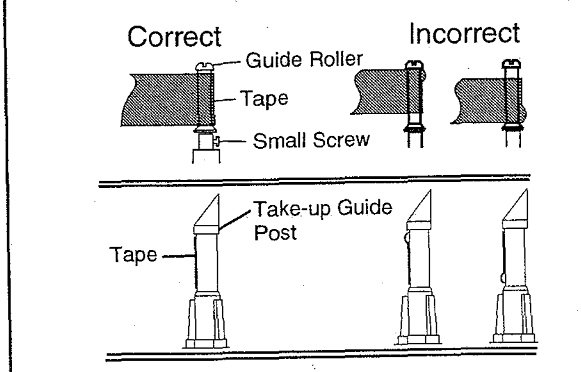


Fig. M5

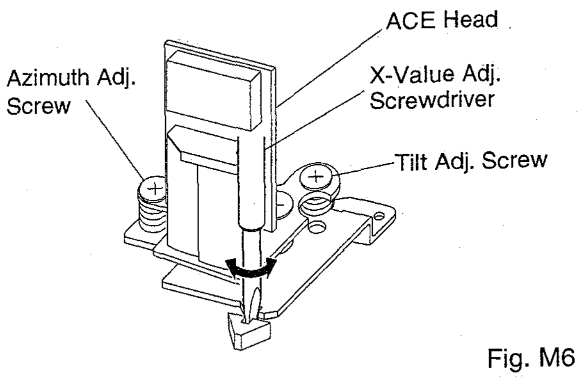


Fig. M6

1-B. X Value Alignment

Purpose:

To align the horizontal position of the Audio/Control/Erase Head.

Symptom of Misalignment:

If the horizontal position of the Audio/Control/Erase Head is not properly aligned, maximum envelope cannot be obtained at the Neutral position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) and TP303 (CTL) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale of the Alignment Tape (FL6N8) and confirm that the PB FM signal is present.
3. Set the Tracking Control Circuit to the center position by pressing the CH UP button then the PLAY button on the VCR. (Refer to note on bottom of page 2-3-4.)
4. Use the X-Value Adj. Screwdriver so that the PB FM signal at TP301 (C-PB) is maximum. (Fig. M6)
5. Press the CH UP button on VCR until the CTL waveform has shifted by approx. +2msec. Make sure that the envelope is simply attenuated (shrinks in height) during this process so that you will know the envelope has been at its peak.

6. Press the CH DOWN button on the VCR until the CTL waveform has shifted from its original position (not the position achieved in step 5, but the position of CTL waveform in step 4) by approximately -2msec. Make sure that the envelope is simply attenuated (shrinks in height) once CTL waveform passes its original position and is further brought in the minus direction.
7. Set the Tracking Control Circuit to the center position by pressing the CH UP button and then the PLAY button on the VCR.

1-C. Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control Circuit.

1. Connect the oscilloscope to TP301 (C-PB) on the Main CBA. Use TP302 (RF-SW) as a trigger.
2. Play back the Gray Scale on the Alignment Tape (FL6N8). Set the Tracking Control Circuit to the center position by pressing the CH UP and then the PLAY button on the VCR. Adjust the height of Guide Rollers [2] and [3] (Fig. M3, Page 2-3-3) watching the oscilloscope display so that the envelope becomes as flat as possible. To do this adjustment, turn the top of the Guide Roller with the Guide Roller Adj. Screwdriver.
3. If the envelope is as shown in Fig. M7, adjust the height of Guide Roller [2] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
4. If the envelope is as shown in Fig. M8, adjust the height of Guide Roller [3] (Refer to Fig. M3) so that the waveform looks like the one shown in Fig. M9.
5. When Guide Rollers [2] and [3] (Refer to Fig. M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M9.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig. M3), check the X Value by pushing the CH UP or DOWN buttons alternately, to check the symmetry of the envelope. Check the number of pushes to ensure center position. The number of pushes UP to achieve 1/2 level of envelope should match the number of pushes DOWN from center. If required, redo the "X Value Alignment."

1-D. Azimuth Alignment of Audio/Control/Erase Head

Purpose:

To correct the Azimuth alignment so that the Audio/Control/Erase Head meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control/Erase Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the alignment tape (FL6N8) and confirm that the audio signal output level is 6 kHz.
3. Adjust Azimuth Adj. Screw so that the output level on the AC Voltmeter or the waveform on the oscilloscope is at maximum. (Fig. M6)

Dropping envelope level at the beginning of track.

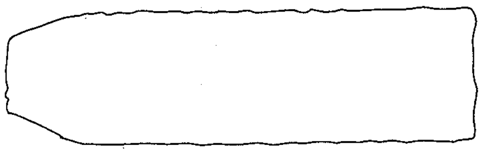


Fig. M7

Dropping envelope level at the end of track.

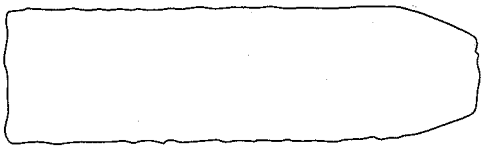


Fig. M8

Envelope is adjusted properly. (No envelope drop)

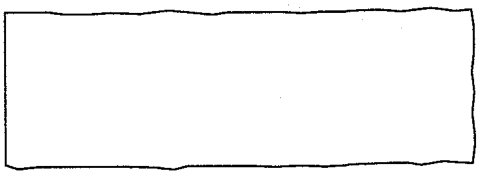


Fig. M9

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Main Mechanism

Before following the procedures described below, be sure to:

1. Remove the deck assembly from the cabinet.
   (Refer to CABINET DISASSEMBLY INSTRUCTIONS on page 1-5-1.)
2. Remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.)
3. First remove Step/Loc. No. [39], and start to remove other parts. (See Fig. DM1.)
4. Before Step/Loc. No. [2] and [9] first remove ACH Connector A, ACH Connector B, VH Connector A, and VH Connector B. (See Fig. DM2.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [37] and [38] in Fig. DM3 on page 2-4-4. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Cylinder Shield	T	DM1	(S-2), (S-14)	
[2]	[2]	Loading Motor Assembly	T	DM2 DM3 DM5 DM6	(S-3), Loading Belt ACH Connectors A and B, FFC Cable	
[3]	[2]	Motor Holder	T	DM1 DM3 DM5	2(S-4)	
[4]	[2]	Cassette Drive Lever Sub Assembly	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-10
[5]	[2]	Pinch Roller Assembly	T	DM3 DM5	(C-1)	Refer to Alignment Sec. Pg. 2-4-10
[6]	[6]	Mode SW CBA	B	DM4 DM5	(S-5), Desolder	
[7]	[2]	Cam	T	DM3 DM5		(+) Refer to Alignment Sec. Pg. 2-4-10
[8]	[2]	Pulley Assembly	T	DM3 DM6	(W-1), Loading Belt	(+)
[9]	[9]	Cylinder Assembly	T B	DM2 DM3 DM7	3(S-6), *VH Connectors A and B, FFC Cable	
[10]	[10]	FE Head	T	DM3 DM7	(S-7)	
[11]	[11]	ACE Head Assembly	T	DM2 DM3 DM8	(S-8), (S-16), FFC Cable	
[12]	[12]	Tape Guide Arm Assembly	T	DM3 DM8	*(P-0), *(L-1)	
[13]	[12]	Capstan Motor	B T	DM4 DM5 DM9 DM16	4(S-9), Capstan Belt, Radiator Plate, Desolder	
[14]	[14]	M Brake S Assembly	T	DM3 DM10	*(L-4)	
[15]	[15]	Tension Lever Assembly	T	DM3 DM10	*(L-2), *(L-3), *(P-1), *(P-2)	
[16]	[16]	Rec Arm	B	DM4 DM11	*(L-5)	
[17]	[17]	BT Arm	B	DM4 DM10 DM11	*(L-6), *(P-2)	
[18]	[17]	Holder Kick Arm	B	DM4 DM11	*(P-3)	
[19]	[17]	Tension Plate	B	DM4 DM11		
[20]	[17]	Mode Lever	T	DM3 DM12	*4(L-7), *(L-8), *Locking Tab	

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[21]	[17]	Idler Assembly	T	DM3 DM13	(C-4)	
[22]	[15]	S Brake Lever	T	DM3 DM14	*(P-4), *(L-10)	
[23]	[17]	M Brake T sub Assembly	T	DM3 DM13	*(P-5), *(L-11)	
[24]	[15]	Reel S	T	DM3 DM14	Poly Slider Washer	(+) Base has slots.
[25]	[17]	Reel T	T	DM3 DM14	Poly Slider Washer	(+)
[26]	[26]	M Gear	T	DM3 DM14	(C-5)	
[27]	[2]	Main Lever Assembly	T	DM3 DM15		
[28]	[2]	M Lever Holder	T	DM3 DM15	*2(L-12)	
[29]	[29]	Clutch Assembly	B	DM4 DM16	(C-2), Capstan Belt, Poly Slider Washer	(+)
[30]	[29]	FF Arm	B	DM4 DM16	*2(L-13)	
[31]	[31]	Sensor Gear	B	DM4 DM17	(C-3)	
[32]	[32]	Main Lever Spring	T	DM3 DM8		
[33]	[33]	Prism	T	DM3 DM13	(S-10)	
[34]	[12]	Loading Lever Assembly	B	DM4 DM18	(S-11)	(+) Refer to Alignment Sec. Pg. 2-4-10
[35]	[34]	Loading Arm T Assembly	B	DM4 DM18		(+) Refer to Alignment Sec. Pg. 2-4-10
[36]	[34]	Loading Arm S Assembly	B	DM4 DM18	(S-15)	(+) Refer to Alignment Sec. Pg. 2-4-10
[37]	[2]	Moving Guide S Preparation	T	DM3 DM19		
[38]	[2]	Moving Guide T Preparation	T	DM3 DM19		
[39]	[39]	Deck Earth Plate	T	DM1 DM3	(S-12)	
[40]	[40]	Cleaner Assembly	T	DM3 DM7	*(L-14)	
[41]	[41]	Insulation Cover	T	DM3 DM13	*3(L-15)	
[42]	[42]	F Brake Assembly	B	DM4 DM9	2(S-13), *(P-6)	
[43]	[43]	Prism (L2)	T	DM3 DM8	(S-17)	
↓ ①	↓ ②	↓ ③	↓ ④	↓ ⑤	↓ ⑥	↓ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as Identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column (1).

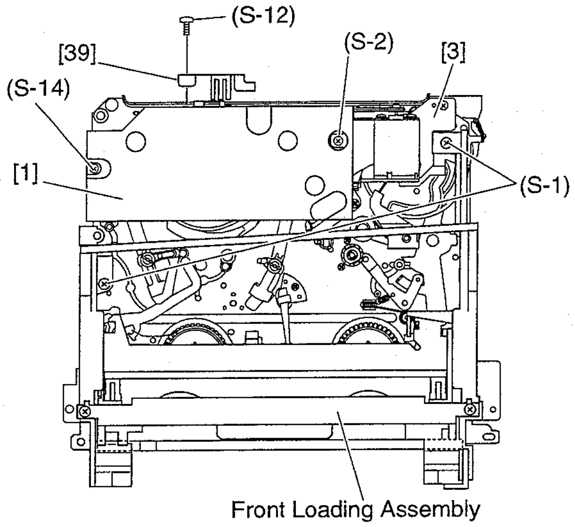
③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

⑦: Adjustment Information for Installation
(+): Refer to Deck Exploded Views for lubrication.

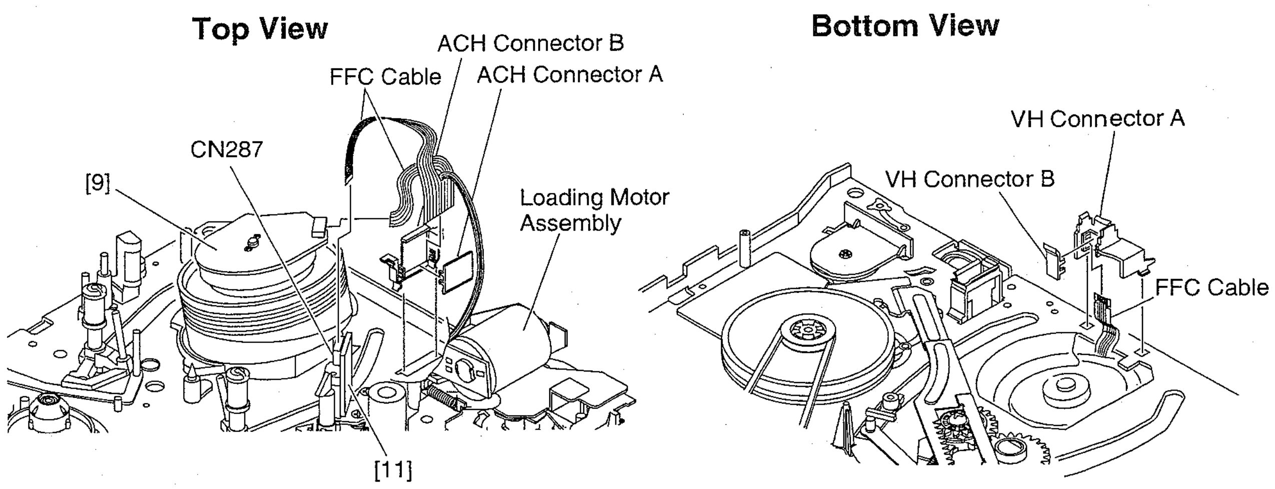

(S-12)
[39]
(S-2)
[3]
(S-14)
[1]
(S-1)
Front Loading Assembly

Note: Remove the Front Loading Assembly before removing [3] Motor Holder.

To remove Front Loading Assembly:

1. Remove 2 Screws; 2(S-1).
2. Lift Assembly up carefully.

Fig. DM1

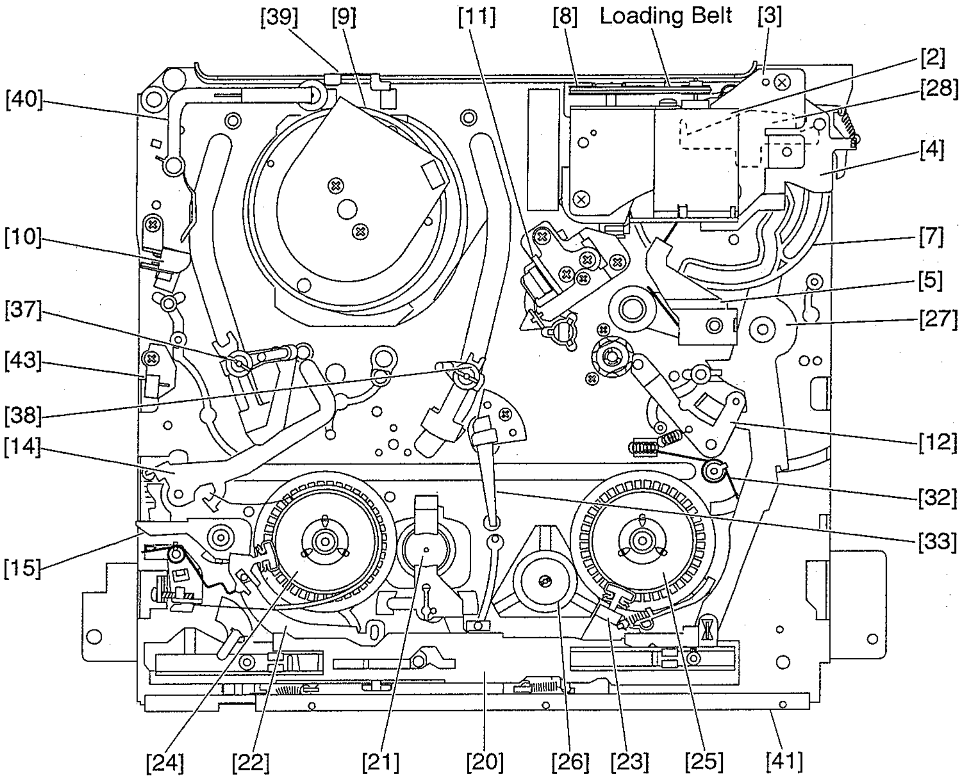

Top View

Bottom View

ACH Connector B
FFC Cable
ACH Connector A
CN287
[9]
Loading Motor Assembly
[11]
VH Connector A
VH Connector B
FFC Cable

Fig. DM2

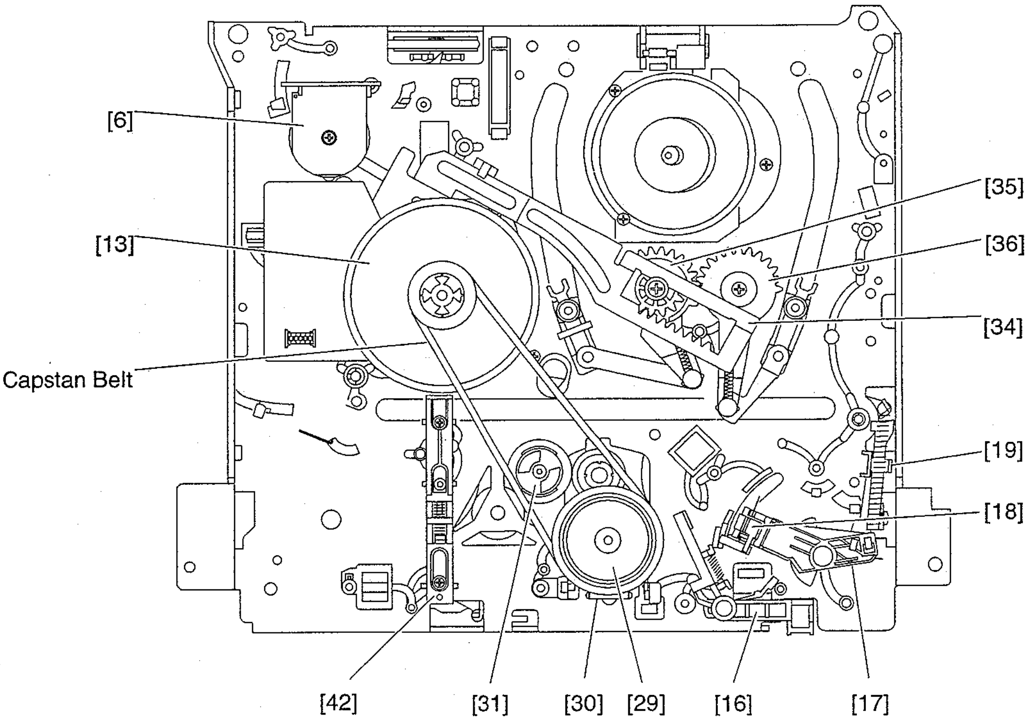
Top View



[39]
[9]
[11]
[8]
Loading Belt
[3]
[2]
[28]
[40]
[4]
[10]
[7]
[5]
[37]
[27]
[43]
[38]
[12]
[14]
[32]
[33]
[15]
[24]
[22]
[21]
[20]
[26]
[23]
[25]
[41]

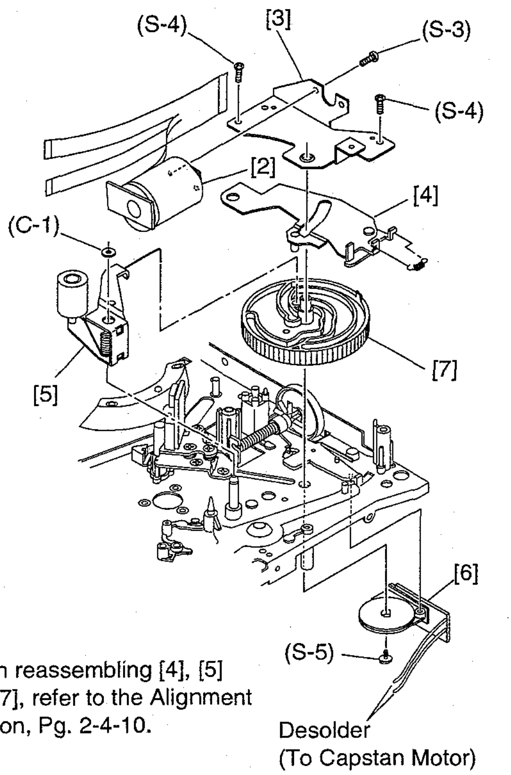
Fig. DM3

Bottom View



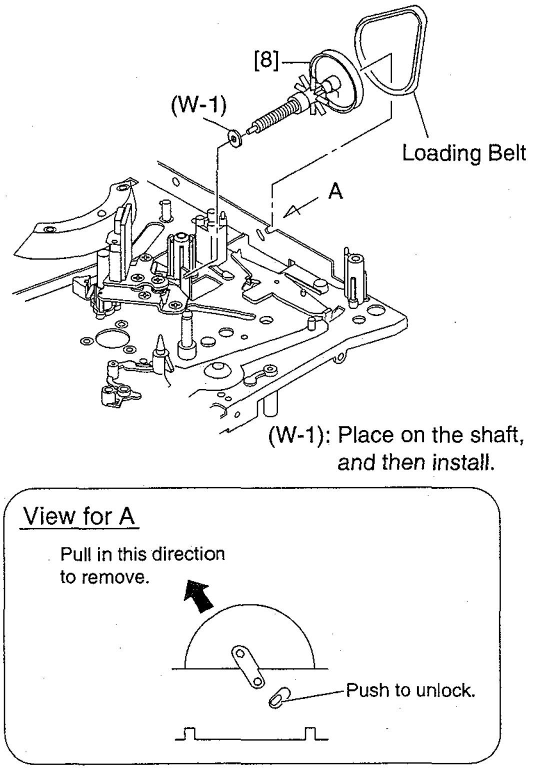
[6]
[35]
[13]
[36]
[34]
Capstan Belt
[19]
[18]
[42]
[31]
[30]
[29]
[16]
[17]

Fig. DM4


(S-4)
[3]
(S-3)
(S-4)
[2]
[4]
(C-1)
[7]
[5]
[6]
(S-5)
Desolder
(To Capstan Motor)

When reassembling [4], [5] and [7], refer to the Alignment Section, Pg. 2-4-10.

Fig. DM5


[8]
(W-1)
Loading Belt
A
View for A
Pull in this direction to remove.
Push to unlock.

(W-1): Place on the shaft, *and then install.*

Fig. DM6

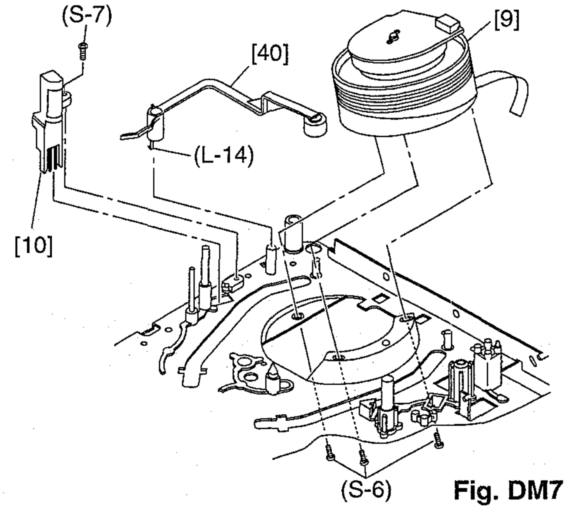

(S-7)
[9]
[40]
(L-14)
[10]
(S-6)

Fig. DM7

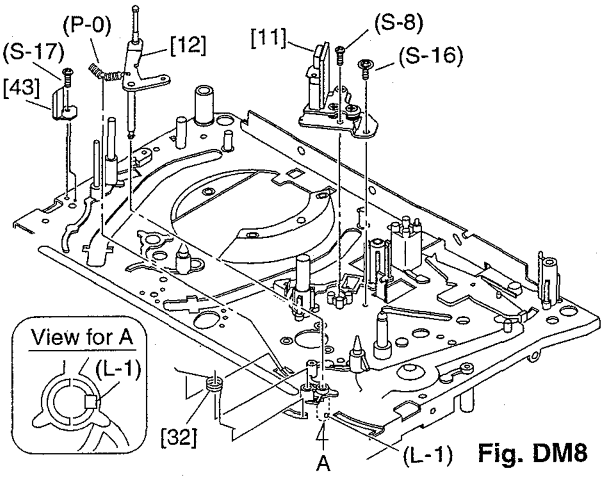

(P-0)
(S-17)
[12]
[11]
(S-8)
(S-16)
[43]
View for A
(L-1)
[32]
A
(L-1)

Fig. DM8

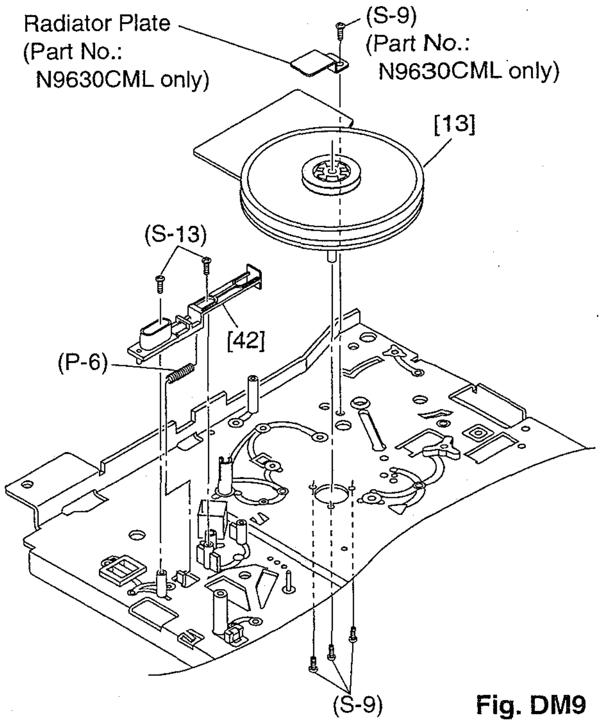

Radiator Plate
(Part No.:
N9630CML only)
(S-9)
(Part No.:
N9630CML only)
[13]
(S-13)
[42]
(P-6)
(S-9)

Fig. DM9

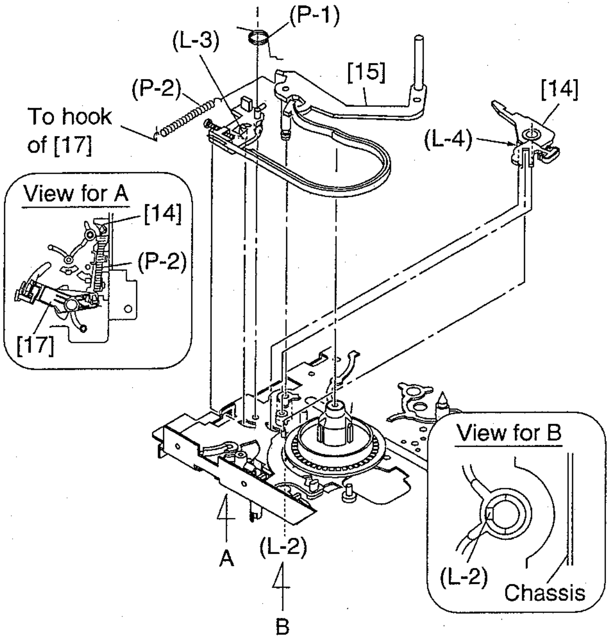

(P-1)
(L-3)
(P-2)
[15]
[14]
To hook of [17]
(L-4)
View for A
[14]
(P-2)
[17]
View for B
A
(L-2)
B
(L-2)
Chassis

Fig. DM10

Turn [8] counterclockwise to move [20] to the right.
Align the indent of [20] with Locking Tab.

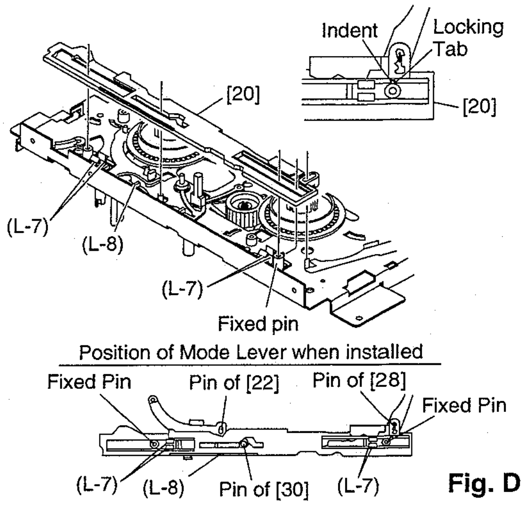

Indent
Locking Tab
[20]
[20]
(L-7)
(L-8)
(L-7)
Fixed pin
Position of Mode Lever when installed
Fixed Pin
Pin of [22]
Pin of [28]
Fixed Pin
(L-7)
(L-8)
Pin of [30]
(L-7)

Fig. DM12

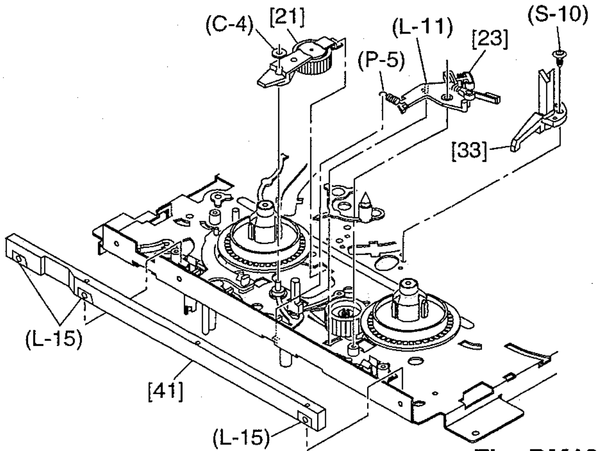

(C-4)
[21]
(L-11)
[23]
(S-10)
(P-5)
[33]
(L-15)
[41]
(L-15)

Fig. DM13

View for A

Reassembly [17], [18] and (P-3).

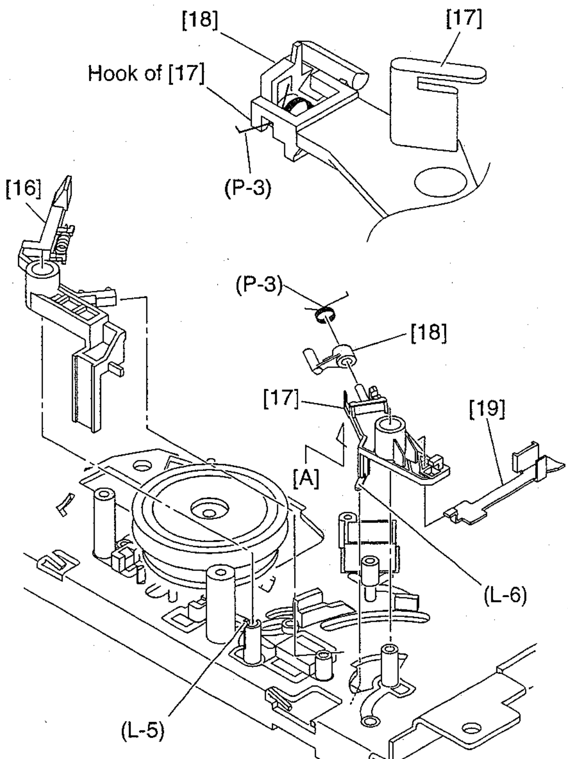

[18]
[17]
Hook of [17]
(P-3)
[16]
(P-3)
[18]
[17]
[19]
[A]
(L-6)
(L-5)

Fig. DM11

If the alignment height is not correct, it is acceptable to use one more Poly Slider Washer to raise the height.
(Poly Slider Washer is 0.1 mm
/0.004 inch in thickness.)

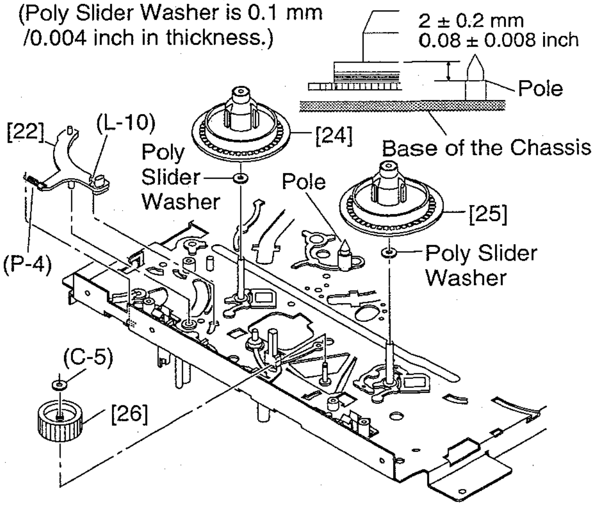
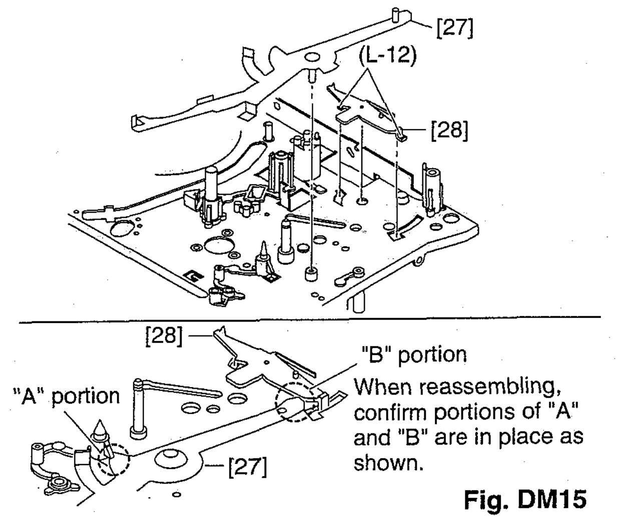

2 ± 0.2 mm
0.08 ± 0.008 inch
Pole
Base of the Chassis
[22]
(L-10)
[24]
Poly Slider Washer
Pole
[25]
Poly Slider Washer
(P-4)
(C-5)
[26]

Fig. DM14


[27]
(L-12)
[28]
[28]
"B" portion
"A" portion
[27]

When reassembling, confirm portions of "A" and "B" are in place as shown.

Fig. DM15

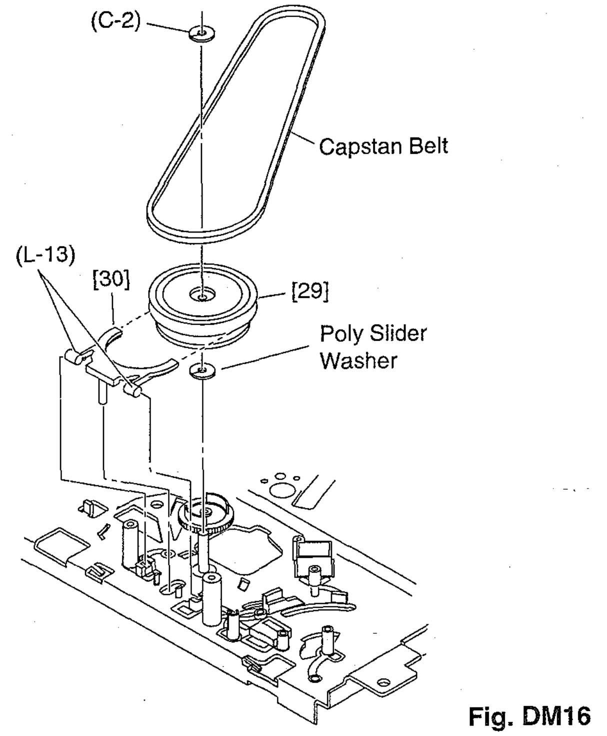

(C-2)
Capstan Belt
(L-13)
[30]
[29]
Poly Slider Washer

Fig. DM16

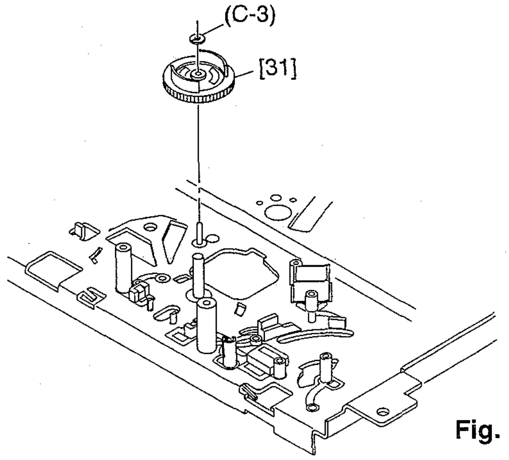
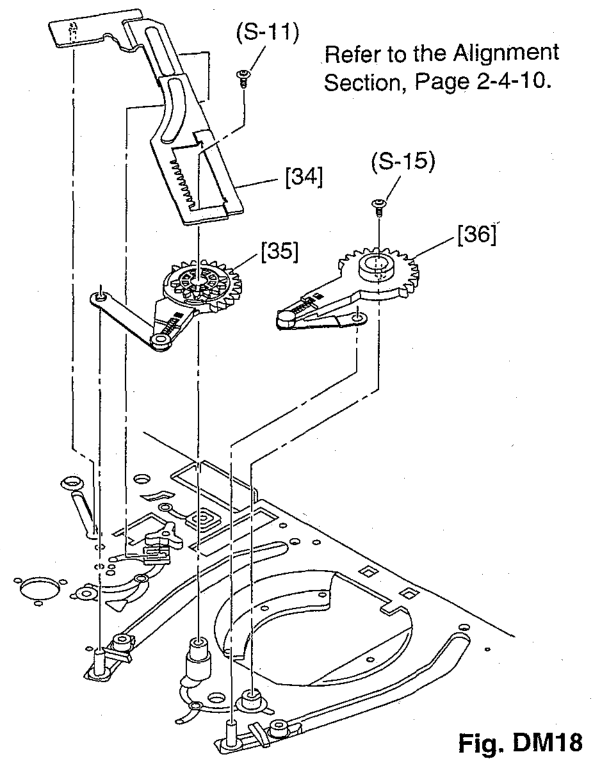


Fig. DM17


(S-11)
[34]
(S-15)
[35]
[36]

Refer to the Alignment Section, Page 2-4-10.

Fig. DM18

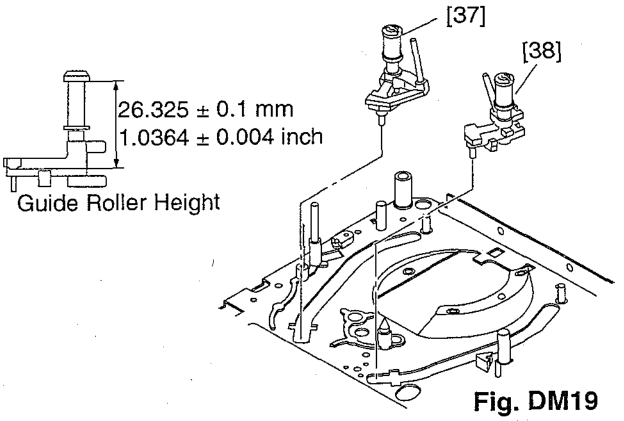

[37]
[38]
26.325 ± 0.1 mm
1.0364 ± 0.004 inch
Guide Roller Height

Fig. DM19

Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.) When reassembling, start with the unit in Cassette-in mode and follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Guide Holder (F)	T	DM22	2(S-1)	
[2]	[1]	Guide Holder (R)	T	DM22	(L-1)	
*[3]	[3]	Slider Gear	R	DM22 DM23	2(L-2)	Eject Position
*[4]	[3]	Slider Gear	L	DM22 DM23	2(L-3)	Eject Position
		Slider Shaft	T	DM22 DM23		Eject Position
[5]	[1]	Cassette Plate sub Assembly	T	DM20 DM21 DM22	(S-2)	
[6]	[1]	Cassette Guide R	R	DM20 DM21 DM22		
[7]	[1]	Cassette Guide L	L	DM22		
[8]	[8]	Front Door Opener	R	DM22 DM23	(L-4)	Eject Position
[9]	[9]	Rack	R	DM20 DM21 DM22	(L-5)	Cassette in Position
[10]	[9]	Cassette Drive Gear (N)	R	DM20 DM21 DM22	(L-6),Cassette Drive Gear Spring	Cassette in Position

↓ ↓ ↓ ↓ ↓ ↓ ↓
① ② ③ ④ ⑤ ⑥ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as Identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column (1).

③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

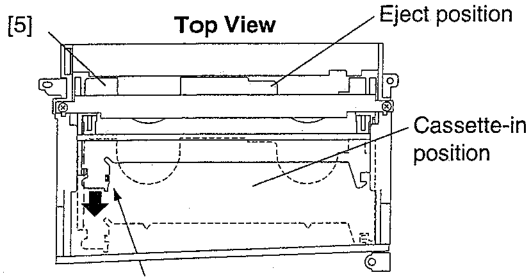
⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g., 2(L-2) = two Locking Tabs (L-2).

⑦: Adjustment Information for Installation
(+): Refer to Deck Exploded Views for lubrication.

*[3], *[4]: Slider Gear in Step [3] and that in Step [4] are identical. However, they are divided into two steps because, before reassembling Slider Shaft, one Slider Gear must be preinstalled at either end of Slider Shaft.

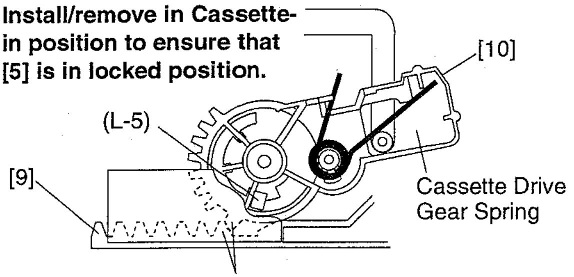
Before removing Parts [6], [9], or [10], shift [5] to Cassette-in position.


[5]
Top View
Eject position
Cassette-in position

Pull these tabs gently to unhook [5] from Eject position.

Fig. DM20

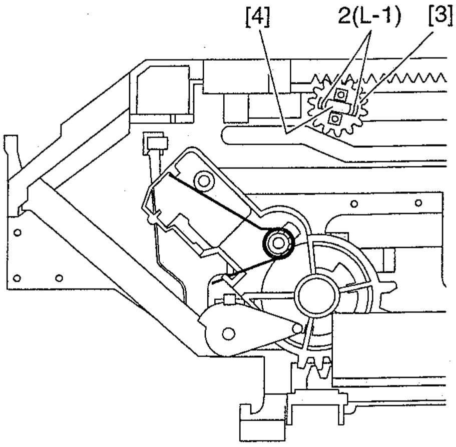
Install/remove in Cassette-in position to ensure that [5] is in locked position.


[10]
(L-5)
[9]
Cassette Drive Gear Spring

When reassembling, set these teeth as shown.

Fig. DM21

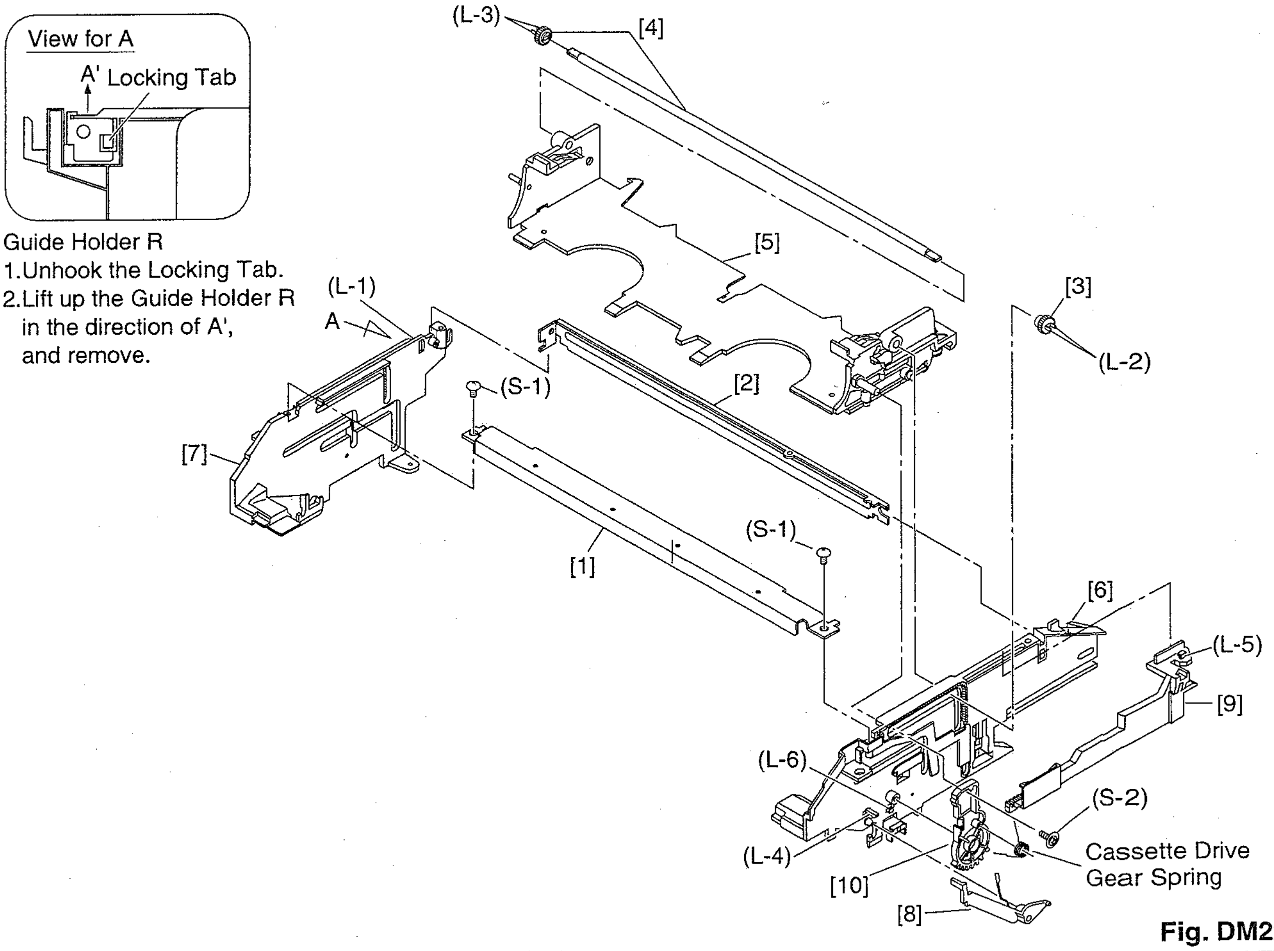
View before disassembling [3] and [4] (Installation of Slider Shaft and Slider Gear)



Install [3] and [4] in Eject position.
(When disassembling, [3] and [4] can be removed either in Eject position or Cassette-in position.)

- This figure shows where [3], [4] and other parts are in Eject position.

Fig. DM23


View for A
A'
Locking Tab
(L-3)
[4]
[5]
(L-1)
A
[3]
(L-2)
(S-1)
[2]
[7]
[1]
(S-1)
[6]
(L-5)
[9]
(L-6)
(S-2)
(L-4)
[10]
Cassette Drive Gear Spring
[8]

Guide Holder R
1.Unhook the Locking Tab.
2.Lift up the Guide Holder R in the direction of A', and remove.

Fig. DM22

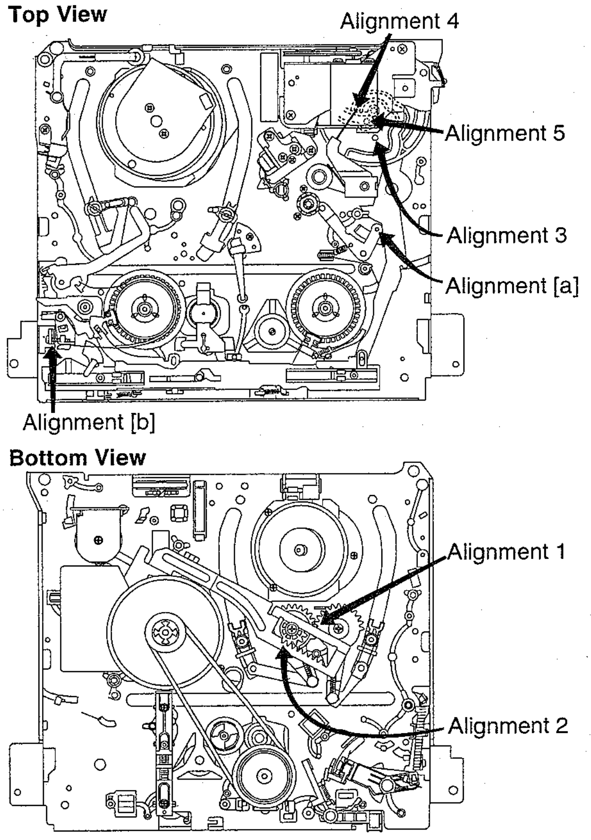
ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position


Top View
Alignment 4
Alignment 5
Alignment 3
Alignment [a]
Alignment [b]
Bottom View
Alignment 1
Alignment 2

Alignment [a] and [b] can be done independently of any other alignment

Fig. AL1

Alignment 1

Loading Arm, S and T Assembly

1. Install Loading Arm S and T Assembly so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Loading Lever Assembly

1. Keeping the two triangles pointing at each other, install the Loading Arm T Assembly so that the last tooth of the gear meets the most inside teeth of the Loading Lever Assembly. See Fig. AL2.

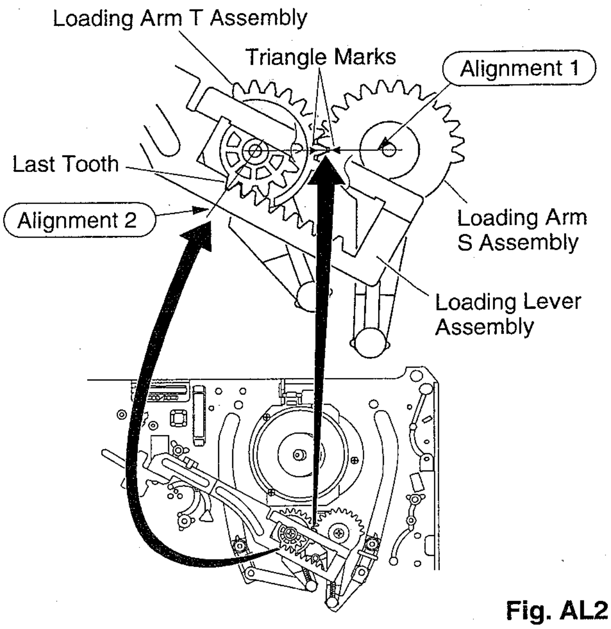
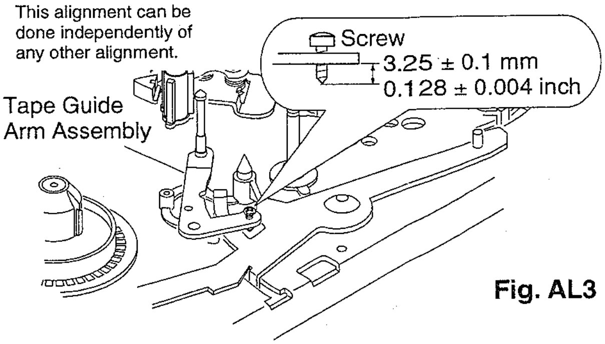

Loading Arm T Assembly
Triangle Marks
Alignment 1
Last Tooth
Alignment 2
Loading Arm S Assembly
Loading Lever Assembly

Fig. AL2

Alignment [a]

Tape Guide Arm Assembly

1. Measurement of the screw must be as specified in Fig. AL3.


Screw
3.25 ± 0.1 mm
0.128 ± 0.004 inch
Tape Guide Arm Assembly

This alignment can be done independently of any other alignment.

Fig. AL3

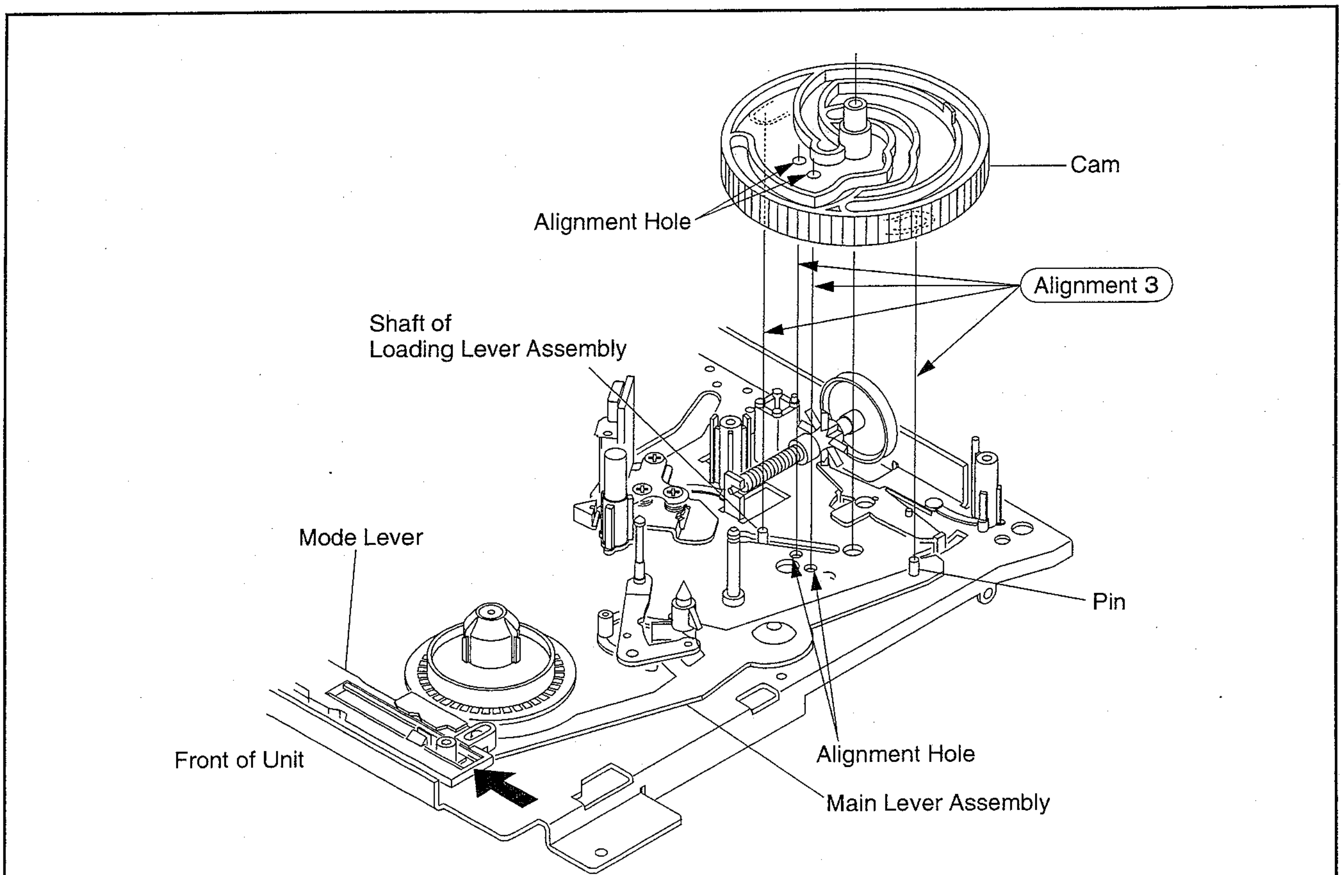

Cam
Alignment Hole
Alignment 3
Shaft of
Loading Lever Assembly
Mode Lever
Pin
Front of Unit
Alignment Hole
Main Lever Assembly

Fig. AL4

Alignment 3

Cam

1. Make sure that the mechanism is in Eject mode so that the shaft of Loading Lever Assembly is in the position shown in Fig. AL4.
2. Align the alignment hole of the Cam with the alignment hole of the base, holding the Cam just above the base.
3. Carefully keeping these two holes aligned, push Mode Lever in the direction of the arrow to install the Cam. The Mode Lever must be pushed to make the pin on the Main Lever Assembly fit in the proper groove in the lower Cam.
4. After installing the Cam, make sure that the alignment hole of the Cam is still aligned with the base hole and that the pin on the Main Lever Assembly and the shaft of the Loading Lever Assembly are inserted into the proper grooves of the lower Cam as specified in Fig. AL4.

Alignment 4

Pinch Roller Assembly

1. Ensure that the Spring of the Pinch Roller Arm Assembly is positioned in the end of the groove of the upper Cam as shown in Fig. AL5.

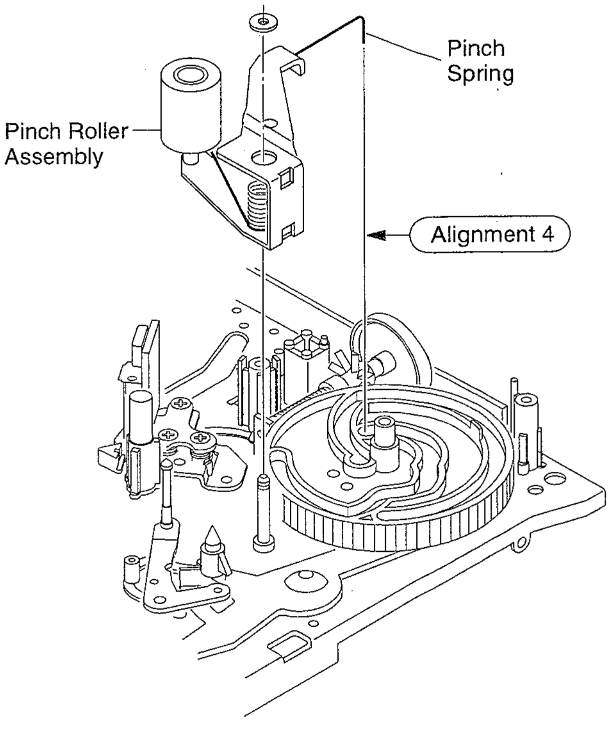

Pinch
Spring
Pinch Roller
Assembly
Alignment 4

Fig. AL5

Alignment 5

Cassette Drive Lever Sub Assembly

1. Ensure that the pin of the Cassette Drive Lever Sub Assembly is positioned in the groove of the upper Cam and that the hole is positioned as shown in Fig. AL6. Then, make sure that the tab of the Cassette Drive Lever Sub Assembly is outside of the tab of the Cam.

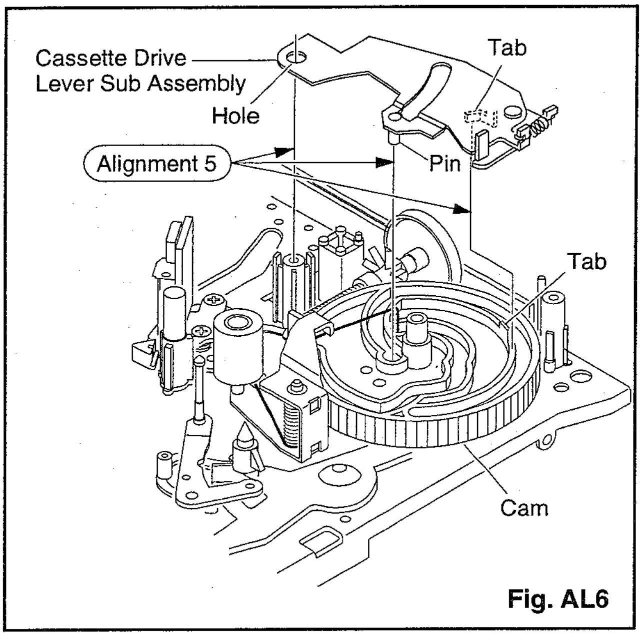

Cassette Drive Lever Sub Assembly
Tab
Hole
Alignment 5
Pin
Tab
Cam

Fig. AL6

Alignment [b]

This alignment can be performed independently of any other alignment.

Tension Lever Assembly

1. Ensure that Tension Lever Assembly is positioned parallel to the chassis' notch as shown in Fig. AL7. This measurement can be made by eye.

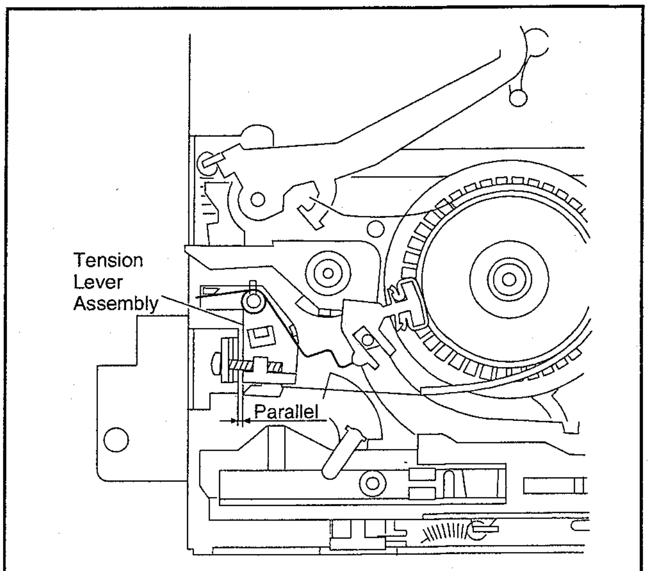

Tension Lever Assembly
Parallel

Fig. AL7

EXPLODED VIEWS AND PARTS LIST SECTION

4-head Hi-Fi VIDEO CASSETTE RECORDER

SVC613

Sec. 3: Exploded views and Parts List Section

- Exploded views
- Parts List

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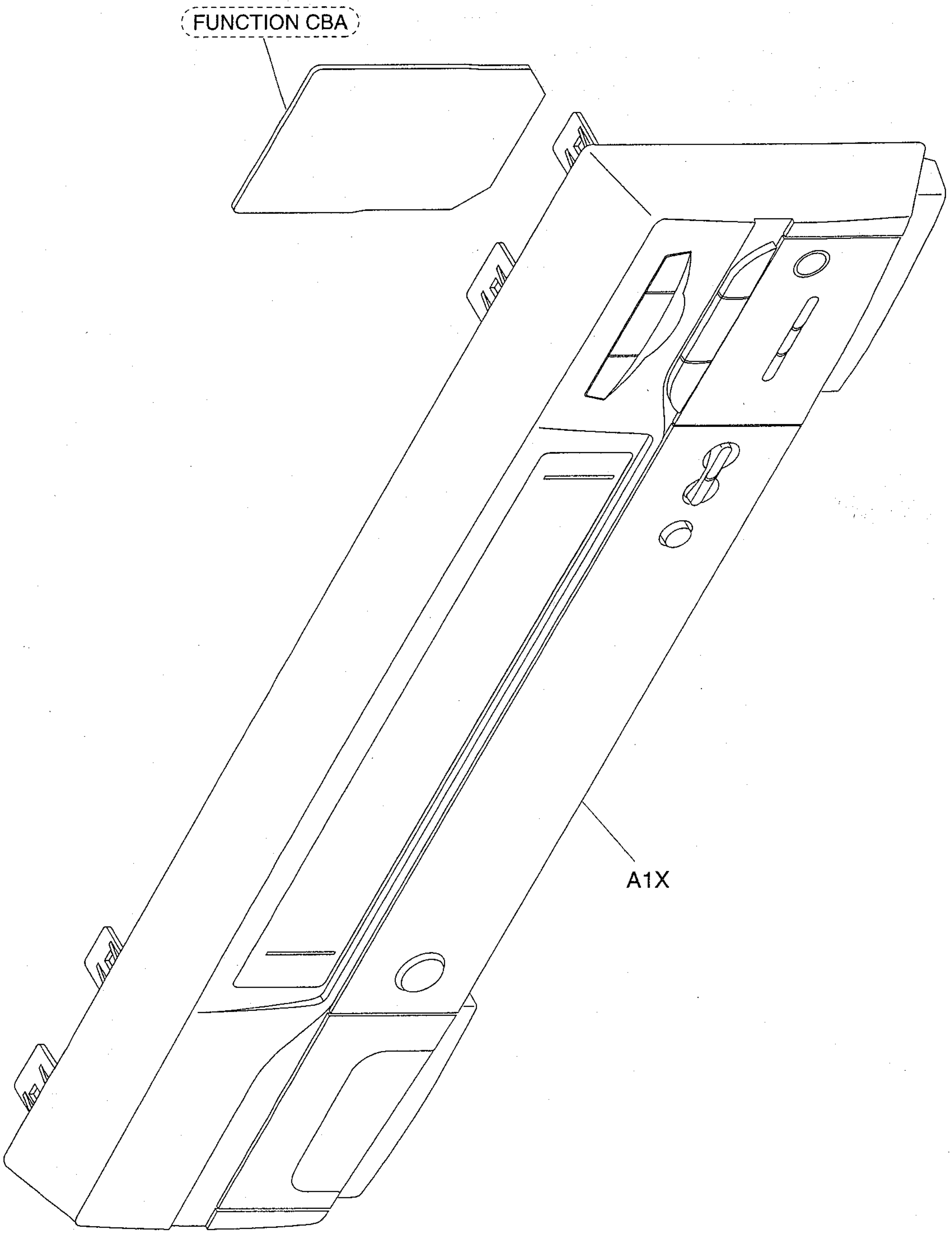
EXPLODED VIEWS

Front Panel

See Electrical Parts List for parts with this mark.

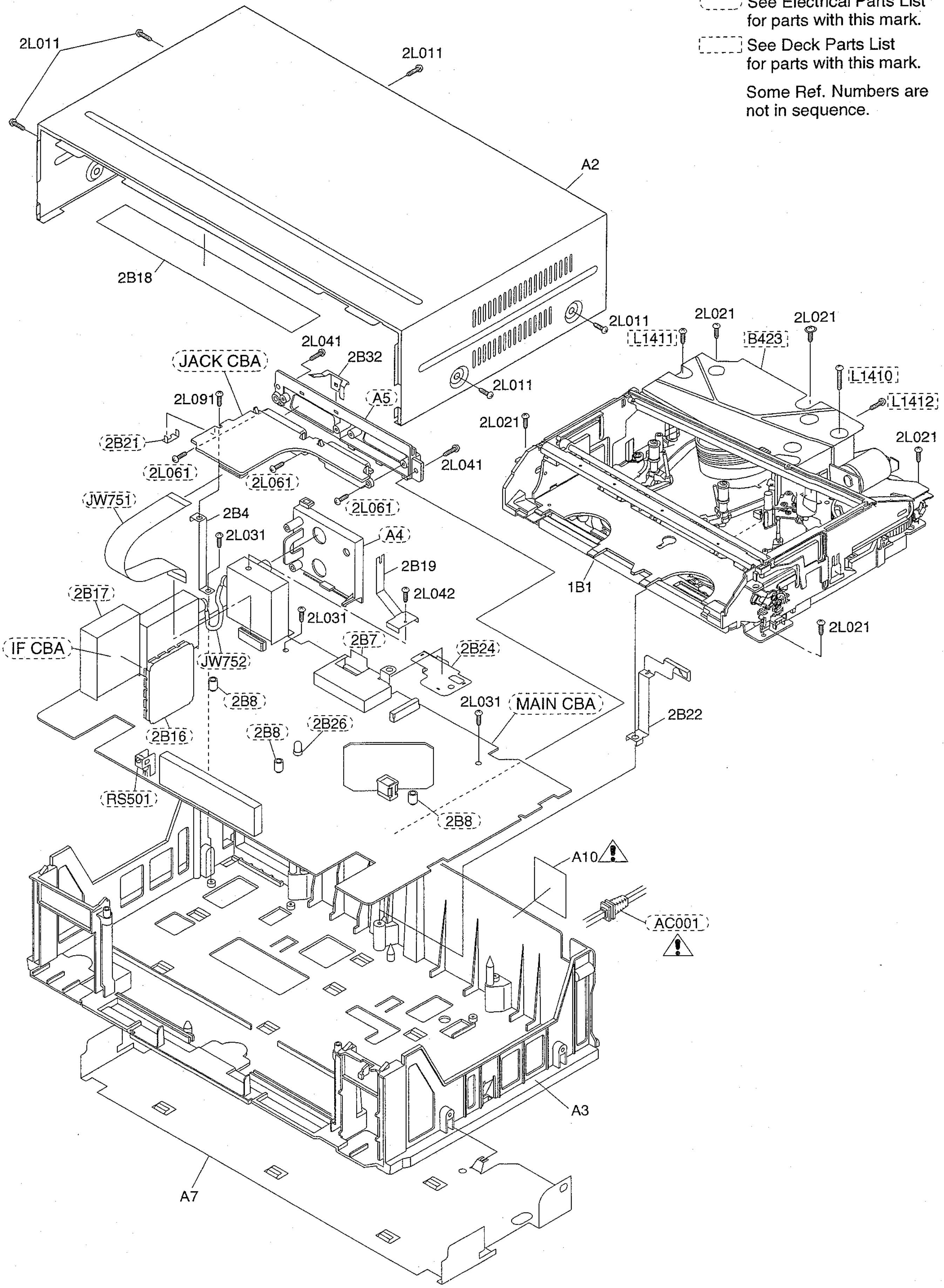

FUNCTION CBA
A1X

Cabinet

See Electrical Parts List for parts with this mark.

See Deck Parts List for parts with this mark.

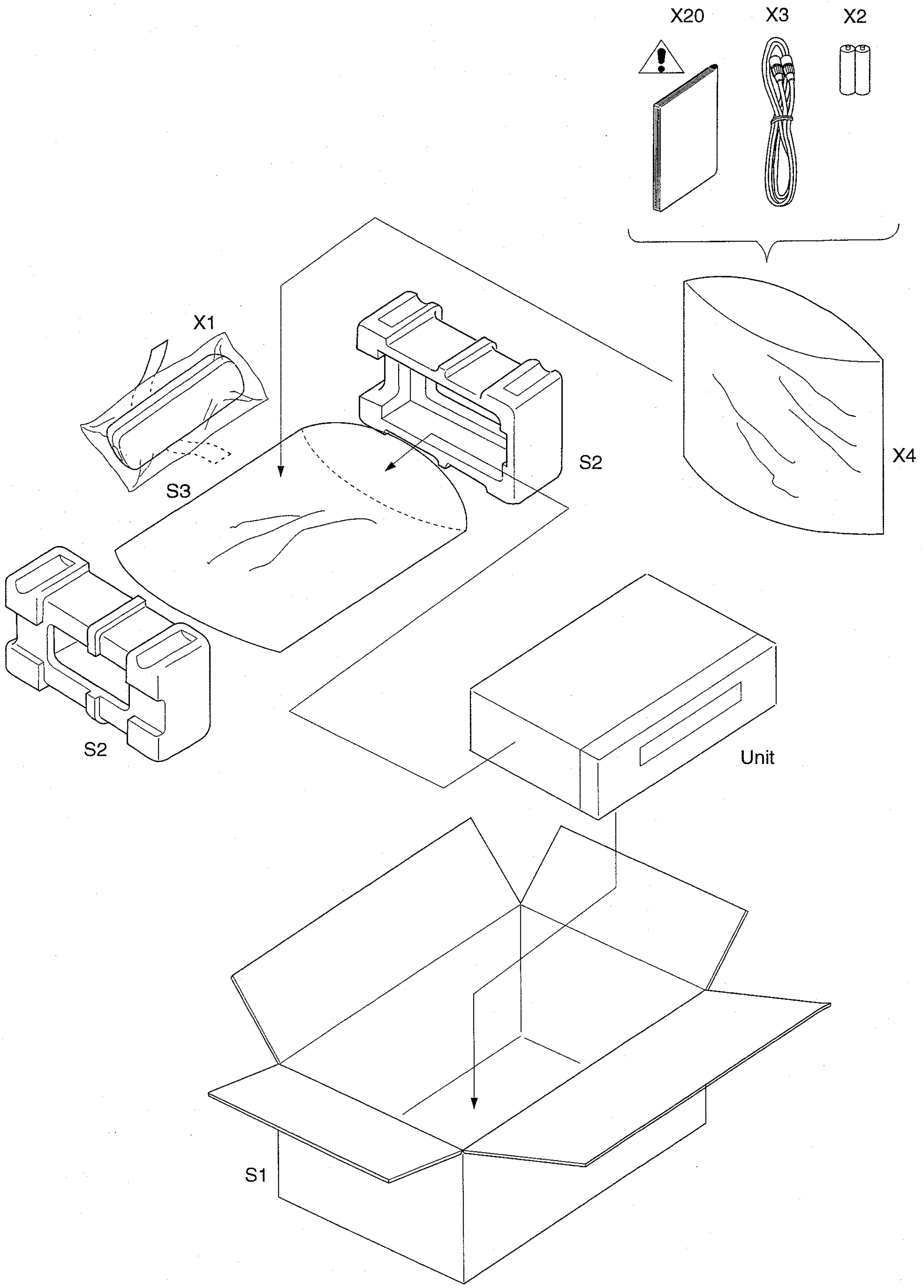
Some Ref. Numbers are not in sequence.



2L011
2L011
A2
2B18
2L011
2L021
2L021
L1411
B423
L1410
L1412
2L011
2L021
2L021
2L041
2B32
JACK CBA
A5
2L091
2B21
2L061
2L061
2L041
2L061
JW751
2B4
2L031
A4
2B19
2L042
1B1
2L021
2B17
2L031
IF CBA
JW752
2B7
2B24
2B8
2L031
MAIN CBA
2B22
2B16
2B8
2B26
RS501
2B8
A10
AC001
A3
A7

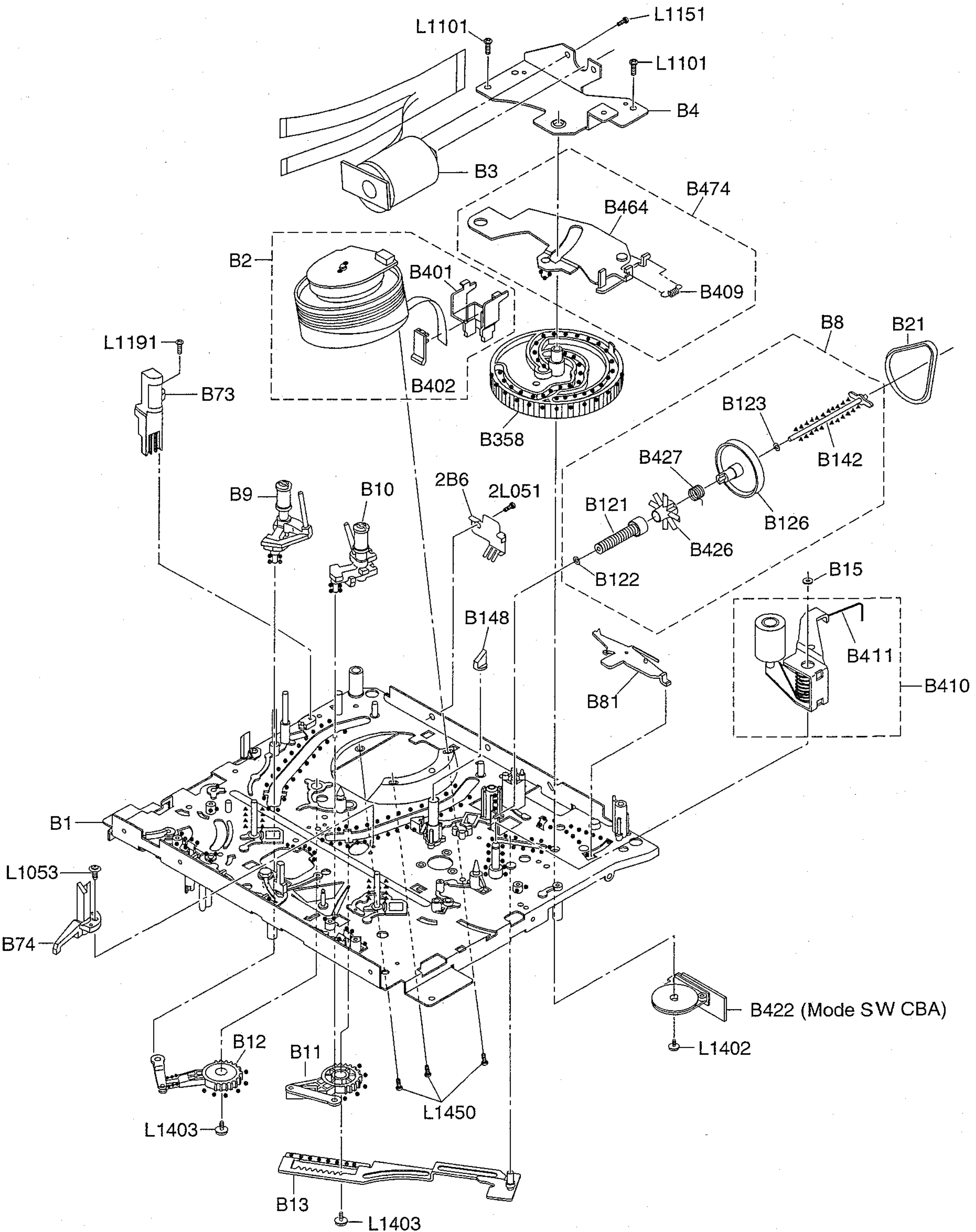
Packing

Some Ref. Numbers are not in sequence.


X20
X3
X2
X1
S2
S3
X4
S2
Unit
S1

Deck Mechanism View 1

Mark	Description	Part No.
● ● ● ● ●	Floil G-374G (Blue grease)	0VZZ00109
▲ ▲ ▲ ▲ ▲	Hydro-Fluid EP56 (Spindle oil)	0VZZ00068


L1151
L1101
L1101
B4
B3
B474
B464
B2
B401
B409
B8
B21
L1191
B73
B402
B358
B123
B142
B427
B9
B10
2B6
2L051
B121
B126
B426
B122
B15
B148
B411
B410
B81
B1
L1053
B74
B422 (Mode SW CBA)
L1402
B12
B11
L1450
L1403
B13
L1403

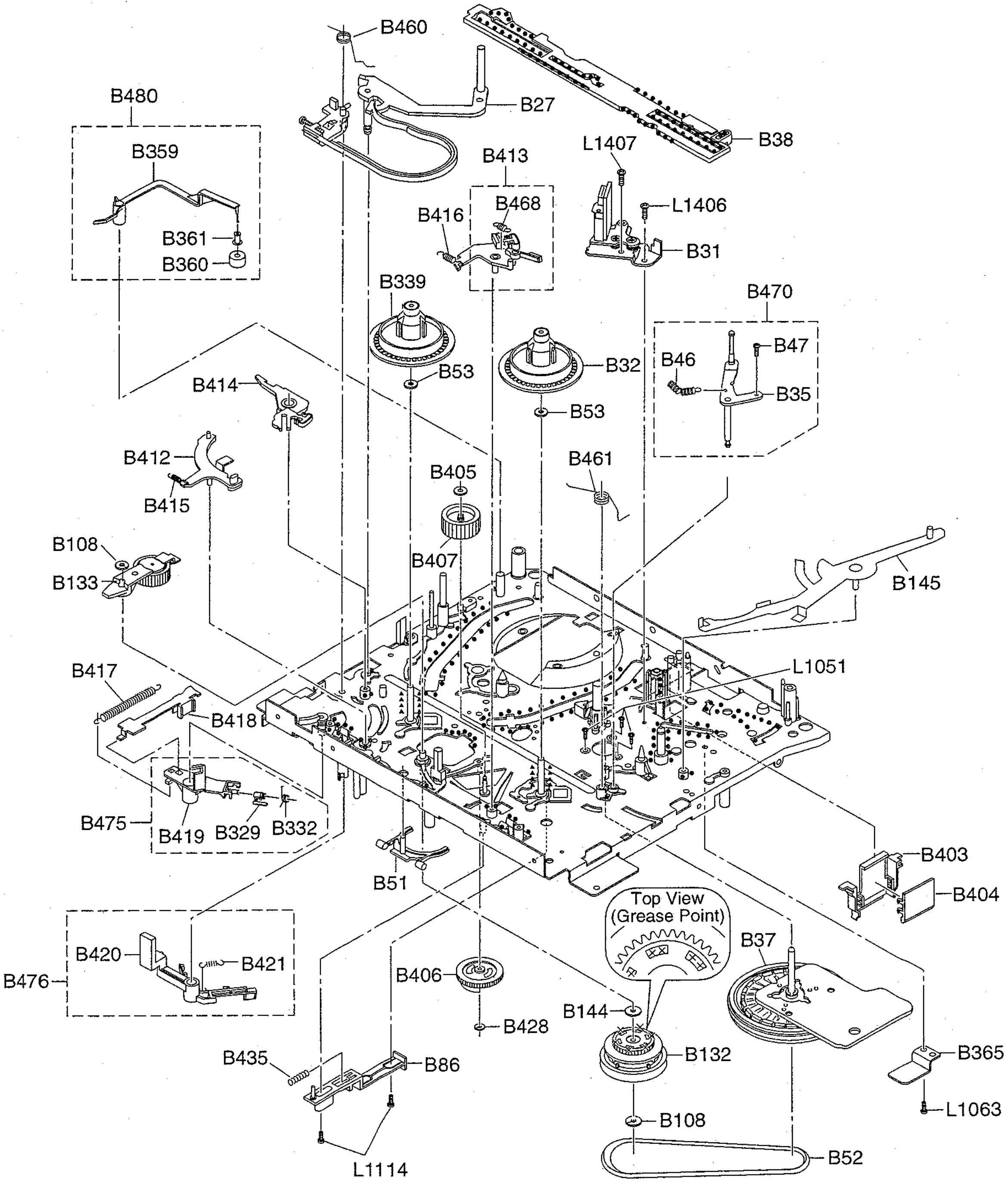
Some Ref. Numbers are not in sequence.

Deck Mechanism View 2

Mark	Description	Part No.
×××××	Sankol FG-84M (White grease)	0VZZ00062
•••••	Floil G-374G (Blue grease)	0VZZ00109
▲▲▲▲▲	Hydro-Fluid EP56 (Spindle oil)	0VZZ00068

Note: Three different, but interchangeable, types of Capstan Motor (B37) may be installed in these models. Based on the type of capstan motor, items B365 and L1063 will be used/not used as shown in the table below.

Type	ID No.	B365	L1063
A	MMDZB12SJ007	Not used	Not used
B	MMDZB12SJ006	Not used	Not used
C	N9630CML	Used	Used


B460
B27
B38
B480
B359
B361
B360
L1407
B413
B416
B468
L1406
B31
B339
B470
B47
B46
B35
B32
B53
B414
B53
B412
B415
B405
B461
B108
B133
B407
B145
B417
B418
L1051
B475
B419
B329
B332
B51
B403
B404
Top View
(Grease Point)
B37
B420
B421
B476
B406
B144
B428
B132
B365
B435
B86
L1063
B108
B52
L1114

Some Ref. Numbers are not in sequence.